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ABSTRACT

This publication has been prepared to assist public school administrators who are involved in planning new vocational education programs. It will assist in planning curriculums, selecting personnel and planning for new buildings and for expanding existing facilities. This handbook is organized to give general information and the purposes of the various vocational education programs in Agriculture, Distributive Education, Consumer and Homemaking Education, Business and Office Occupations, Trade and Industrial Education, Cooperative Vocational Education, Industrial Arts, Occupational Orientation, and Vocational Guidance. For each area of training, the objectives of the program are listed and followed by an outline of the organization of instruction. A description of each type of program within the area is given. Basic information on the organization of instruction in the various vocational education programs follows the program descriptions. A description of the youth activities programs for the instructional program follows the discussion on organization of instruction. A nine-item bibliography, classroom floor plans, and equipment lists are included. (Author/KP)

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PLANNING FOR PROGRAMS IN VOCATIONAL-TECHNICAL EDUCATION IN SECONDARY SCHOOLS

A HANDBOOK FOR LOCAL ADMINISTRATORS

Compiled by

James E. Patton

Administrative Publication 0002

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Mississippi State University

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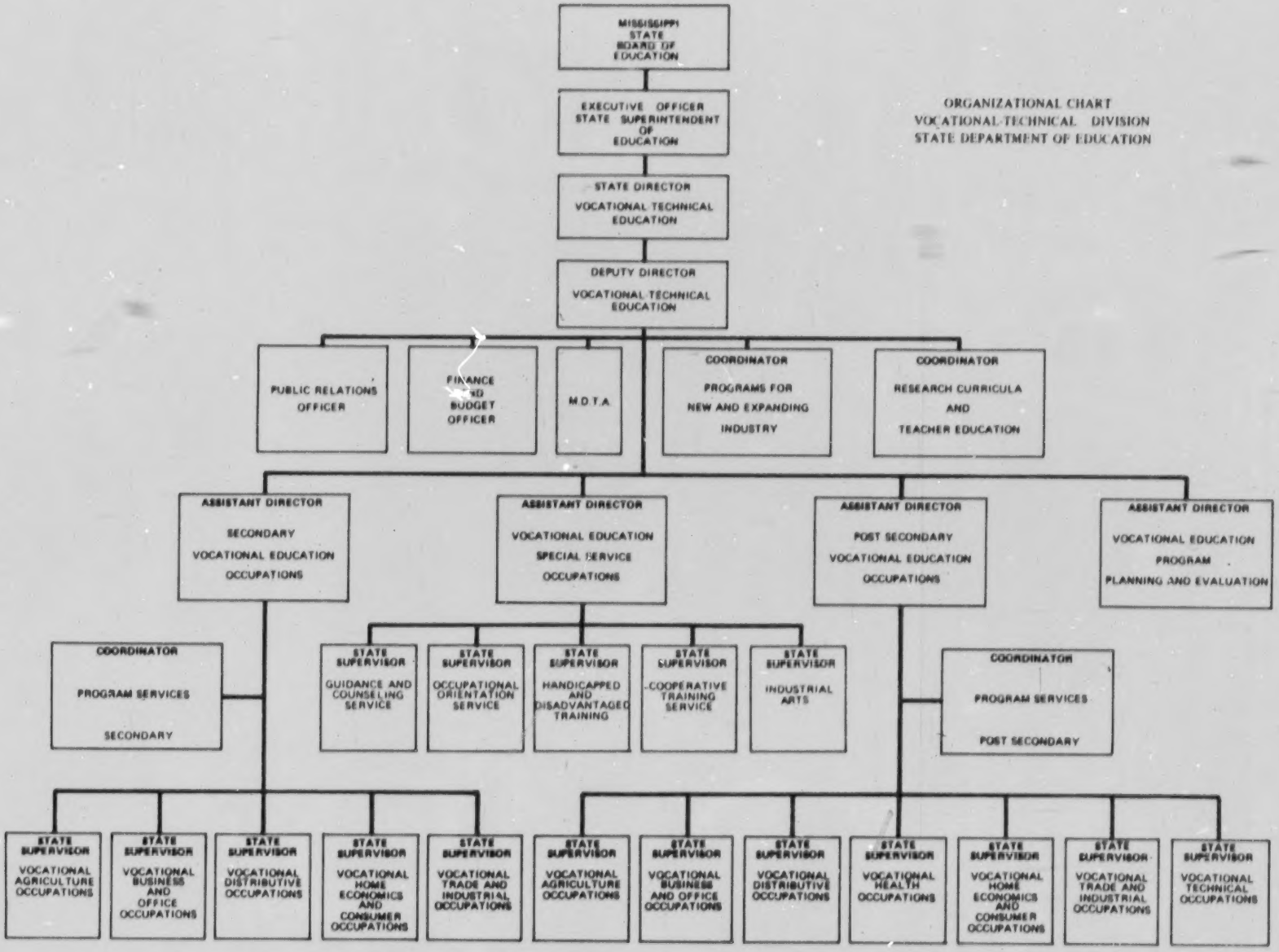
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STATE SUPERVISOR VOCATIONAL BUSINESS AND OFFICE OCCUPATIONS
STATE SUPERVISOR VOCATIONAL DISTRIBUTIVE OCCUPATIONS
STATE SUPERVISOR VOCATIONAL HOME ECONOMICS AND CONSUMER OCCUPATIONS
STATE SUPERVISOR VOCATIONAL TRADE AND INDUSTRIAL OCCUPATIONS
STATE SUPERVISOR VOCATIONAL AGRICULTURE OCCUPATIONS
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FOREWORD

The Vocational Education Act of 1963 established opportunities for the states to expand programs of vocational education. One of the results of this expansion has been a phenomenal growth in all of the areas of vocational education. Public school administrators have been faced with problems concerning construction of facilities to house these programs.

This publication was prepared to assist local administrators and other interested persons who are planning construction of new vocational facilities. These suggestions and guidelines for functional space utilization and educational specifications should provide assistance to administrators and should be helpful in promoting quality programs for the youth of Mississippi.

These guidelines represent the minimal suggested requirements for a quality educational facility. Individuals desiring additional specific information for planning facilities in vocational education should contact the State Director of Vocational Education and/or the State Supervisor in the area in which expansion is planned.

Troy Majure
State Director
Vocational-Technical Education

ACKNOWLEDGMENTS

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Business and Office Education

Mr. Bill Messer, State Supervisor
Trade and Industrial Education

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Cooperative Education

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Occupational Orientation & Vocational Guidance

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Industrial Arts Education

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I. INTRODUCTION

Vocational education in the public school system in the United States began in the early part of the twentieth century. The private trade schools and the manual training in the public schools had failed to prepare workers for jobs in American industry. Although proponents of manual training claimed general education objectives rather than vocational objectives, their graduates used the training for vocational purposes.

The National Society for the Promotion of Industrial Education and the United States Chamber of Commerce combined efforts to study and promote vocational-industrial education in the public schools. This combined effort, with the support of national and state officials, educators, labor, management, and members of Congress, resulted in the passage of the Smith-Hughes Act in 1917. The Smith-Hughes Act provided funds to be used by the states on a matching basis. The Federal Board for Vocational Education was designated as the federal agency to work with the state boards to establish programs of vocational education in the public schools.

The Vocational Education Act of 1963 as amended by the Vocational Education Amendments of 1968 indicates that vocational-technical education programs are intended for "persons of all ages in all communities," and that those courses offered under such programs must be "realistic in the light of actual and anticipated opportunities for gainful employment and must be suited to their needs, interests, and abilities to benefit from such training."

The legislation also provides that vocational-technical education include within its scope all occupations which are not generally considered professional and that do not require a baccalaureate or higher degree.[1]

The State Board of Education, consisting of the State Superintendent, the Secretary of State, and the Attorney General, is the designated agency responsible for carrying out the vocational education program in Mississippi. The State Director for Vocational Education, assisted by state supervisory personnel, has the responsibility of administering the program and guiding local school administrators and teachers in developing local programs. Contracts between the state board and local boards of education are made through persons delegated by the state board and local boards for that purpose.[2]

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[1]U.S. Office of Education, **Vocational Education and Occupations** (Washington: U.S. Office of Education, July, 1969).

[2]State Board of Education, **Standards and Policies Governing the Operation of Vocational Education in Mississippi**, Bulletin No. 128 (Jackson, Mississippi: State Board of Education, 1961).

The public school system has the responsibility of providing a comprehensive educational program for all of the people within its area. In order to serve this function, the needs of the individuals and the community should be determined and an educational program developed to meet the needs. Vocational education should provide for the training of out-of-school youth and adults, as well as high school boys and girls.

While the broad goal of education in general is "to prepare for living," vocational education is "designed to prepare individuals for gainful employment as semiskilled or skilled workers or technicians or subprofessionals in recognized occupations and in new emerging occupations, or to prepare individuals for enrollment in advanced technical education programs, but excluding any program to prepare individuals for employment in occupations generally considered professional or which require a baccalaureate or higher degree."[3]

PURPOSE OF HANDBOOK

This publication has been prepared to assist public school administrators who are involved in planning new vocational education programs. It will assist in planning curriculums, selecting personnel, and planning for new buildings and/or expanding existing facilities. The content of this publication represents a consensus of the staff members of the Vocational Education Division, Mississippi State Department of Education, and the Research and Curriculum Unit, who served as a planning committee for this report.

HOW TO USE THE HANDBOOK

The handbook is organized to give general information and the purposes of the various vocational education programs. For each area of training, the objectives of the program are listed and followed by a discussion of the organization of instruction. A description of each type of program within the area is given.

Basic information on the organization of instruction in the various vocational education programs follows the program descriptions. A description of the youth activities programs for the instructional program follows the discussion on organization of instruction.

The number of students to be enrolled in each class and the amount of space per student for classroom, shop, and/or laboratory will vary from one service area to another. A good rule of thumb for class size is 20 students, and floor space of 20 to 35 square feet per student is recommended. For specific recommendations, see the discussion regarding space and class size following the program descriptions in the publication, or contact the state supervisor of the area of instruction.

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[3]American Vocational Association, **Vocational-Technical Terminology** (Washington, D. C.: American Vocational Association, 1971).

The above information should help determine, to a great extent, what programs or areas of instruction would meet the needs of students in a given community. Once a tentative decision has been made concerning what type of program should be offered, consideration should be given to the availability or acquisition of facilities.

PROCEDURE FOR INITIATING PROGRAMS

The superintendent of schools or his assistant is usually the person responsible for starting any new educational program. He is concerned with developing quality vocational education programs and additions to the curriculum to meet the occupational needs of the community and the students. He is also concerned with maintaining minimum standards to qualify for vocational funds for reimbursable programs. When the superintendent of schools learns of interest in a vocational program, he may choose to contact members of the Vocational Education Division, Mississippi State Department of Education, for assistance. The addresses and titles of the state supervisors are listed below:

State Supervisor
Agricultural Education
P. O. Box 771
Jackson, Mississippi 39205

State Supervisor
Distributive Education
P. O. Box 771
Jackson, Mississippi 39205

State Supervisor
Homemaking Education
P. O. Box 771
Jackson, Mississippi 39205

State Supervisor
Business and Office Education
P. O. Box 771
Jackson, Mississippi 39205

State Supervisor
Trade and Industrial Education
P. O. Box 771
Jackson, Mississippi 39205

State Supervisor
Cooperative Education
P. O. Box 771
Jackson, Mississippi 39205

State Supervisor
Occupational Orientation
and Vocational Guidance
P. O. Box 771
Jackson, Mississippi 39205

State Supervisor
Industrial Arts Education
P. O. Box 771
Jackson, Mississippi 39205

Before planning implementation of any vocational education program, a realistic and verified need for the program must be established. In order to develop a clear picture of realistic needs, the following three factors are suggested: The local State Employment Security Office should be contacted to determine employment needs and trends. Secondly, an independent survey sponsored by the board of education but conducted by a general advisory committee should be made to add validity to present and projected needs. Third, a survey of the pupils attending school, along with their parents, should be taken to determine the acceptability of new programs in the community.

When the employment needs and trends and the acceptability of new vocational education programs have been determined, and the need for training in specific areas has been established, consideration should be given to the type of program to offer. The local school official, in cooperation with the advisory committee and the staff members of the Vocational Education Division, Mississippi State Department of Education, should determine which of the programs of vocational education can best satisfy the training needs. Care should be taken in the selection of programs to assure that adequate facilities can be provided.

Once the type of program has been established, application should be made to the Vocational Education Division, Mississippi State Department of Education, for approval to operate the program.

SURVEYS

The community occupational survey is one of the best techniques for determining the need for vocational education. This survey should reveal the present occupational structure of the community, indicate the areas of vocational education which need enriching or expanding, and identify specific curriculum areas in which new programs should be established.

The scope or comprehensiveness of the occupational survey will be determined by the purposes and objectives of vocational education in the community. The survey should be an outgrowth of recognized needs of the community and the school. The elements that should be considered in such a survey are: who should sponsor it; what techniques should be used for conducting the survey; questionnaires and interview forms; tabulation of data; and conclusions, recommendations and reporting. For a detailed treatment on conducting a survey, see **Community Surveys for Educational Purposes.**[4]

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[4]Industrial Education Department, **Community Surveys for Educational Purposes** (Mississippi State, Mississippi: Mississippi State University, 1953). This publication is available from the Research and Curriculum Unit, Mississippi State University, Mississippi State, Mississippi.

ADVISORY COMMITTEES

Vocational programs are required by law to operate with the counsel of advisory committees. Advisory committees are of two types: general advisory committees and craft committees. The general advisory committee is composed of representatives from education, business, industry, labor, news media and the professions. The advice of the members of this committee should concern such areas as program objectives, community surveys, student selection, staffing, and public relations.

The craft committee is composed of persons selected from a single trade or a cluster of trades and is usually found in trade and industrial education. The recommendations of the people on this committee are more specific and concern course content, equipment and supplies, facility requirements and behavioral objectives for individual students.

The advisory committee should be appointed by the superintendent of schools by a letter of invitation. The literature concerning advisory committees indicates that committee membership varies from a low of 5 for a small community to a high of 25 for a larger city. The membership should represent the following areas of interest:

School teachers and administrators

Owners, managers, and personnel directors of business and industry

Civic club members

Professional association members

Chamber of commerce members

State employment service representative

Organized labor

Newspaper reporters

Radio and TV reporters

Parents

The advisory committee's first meeting could be devoted to orientation of the purpose of the vocational education program and its purpose and benefits to the community and youth. Committee members could take this information to the organizations they represent to get a reaction from their respective organizations. At the second meeting, the reports of committee members would reveal the consensus of the community concerning vocational education needs. Subcommittees could be appointed to gather information before the second meeting through surveys and/or other types of research.

The duties of the advisory committee are strictly advisory, leaving educational policy under the control of the superintendent of schools and/or the local board of education. The advisory committee should be a sounding board for advice and ideas

on vocational education programs. The committee may be asked to suggest sources and types of instructional materials, recommend minimum standards for students and point out adult education needs. The advisory committee may be helpful in locating and contacting prospective teachers to serve as resource personnel for the instructional programs and to aid in developing evaluation procedures.

TEACHING PERSONNEL

When the program is approved, the local school district should begin the process of employing a teacher who meets the requirements for teacher certification and/or vocational licensing. The employment of teaching personnel for vocational education programs should be a cooperative effort between the local school district and the staff of the Vocational Education Division, Mississippi State Department of Education. The state supervisors of the various service areas are in constant contact with the teacher education institutions, businesses, industries, and other sources of prospective teachers. The state supervisors are knowledgeable of the requirements for certification and vocational licensing for teaching.

In some areas of vocational education, a baccalaureate degree in the area to be taught will qualify a prospective teacher. In other areas, the baccalaureate degree and work experience are required. In some areas, work experience with less than a baccalaureate will suffice. For specific requirements for teacher certification, see **Regulations for Teacher Certification,** Bulletin 130, Division of Instruction, Mississippi State Department of Education, or contact the appropriate state supervisor of vocational education. For the specific requirements for vocational licensing, see **Regulations for Vocational-Technical Teacher Licensing,** Vocational Education Division, Mississippi State Department of Education.

TEACHER CERTIFICATION

The legal requirements established by the Office of Teacher Certification as authorized by the Mississippi State Board of Education require that every teacher, supervisor, and administrator employed by the public schools in Mississippi hold an appropriate and valid teaching certificate. The certificate must be registered with the superintendent of schools in the county or district in which the teacher is employed. The certificate must be registered and in force before money can be expended for salaries of the respective teacher, supervisor, or administrator.

The recipient of a teaching certificate must be at least 18 years of age or hold a bachelor's degree. He must be a citizen of the United States or be an applicant for citizenship. The recipient of a teaching certificate must possess moral, personal and professional qualities that are judged to be at least "acceptable" by a teacher education representative, the registrar of that institution, or by the superintendent under whom the applicant has taught or by the employing superintendent.

A vocational education teacher must have a secondary teacher's certificate with an endorsement in the vocational area in which he will teach. The endorsement requirements usually include the basic technical courses for the subject field plus professional courses, such as methods of teaching. For details concerning certification in the specific vocational areas, see Chapter II, **Regulations for Teacher Certification,** Bulletin 130, 1970. This bulletin is available from the Office of Teacher Certification, Mississippi State Department of Education, Box 771, Jackson, Mississippi.

II. AGRICULTURE
01.01 - 01.99

Agriculture is comprised of the group of related courses or units of subject matter which are organized for the purpose of carrying on learning experiences concerned with preparation for or upgrading in occupations requiring knowledge and skills in agricultural subjects. The functions of agricultural production, agricultural supplies, agricultural mechanization, agricultural products (processing), ornamental horticulture, forestry, agricultural resources, and the services related thereto, are emphasized in the instruction designed to provide opportunities for pupils to prepare for or improve their competencies in agricultural occupations. An agricultural occupation may include one or any combination of these functions.

PURPOSE

The major purpose of the agricultural education program is to provide quality education as a part of the total program of public education in agriculture and renewable natural resources. Programs should be available for all persons in all geographical areas preparing for employment in, those employed in, and those continuing education for occupations requiring knowledge and skills in the broad field of agriculture.

OBJECTIVES

The major program objectives are as follows:

1. To develop agricultural competencies needed by individuals engaged in or preparing to engage in production agriculture.
2. To develop agricultural competencies needed by individuals engaged in or preparing to engage in agricultural occupations other than production agriculture.
3. To develop an understanding of and appreciation for career opportunities in agriculture and the preparation needed to enter and progress in agricultural occupations.
4. To develop the ability to secure satisfactory placement and to advance in an agricultural occupation through a program of continuing education.
5. To develop those abilities in human relations which are essential in agriculture occupations.
6. To develop the abilities needed to exercise and follow effective leadership in fulfilling occupational, social, and civic responsibilities.

TYPES OF PROGRAMS

The types of agricultural programs listed by code numbers for agriculture as used by the U. S. Office of Education are listed below. (The following was taken from **Vocational Education and Occupations.**)

01.01 Agricultural Production

This area includes subject matter and learning activities which are concerned with the principles and processes involved in the planning related to and the economic use of facilities, land, water, machinery, chemicals, finance, and labor in the production of plant and animal products. Activities include classroom instruction and laboratory experiences in and out of school, including farms, ranches, and other agriculturally related establishments. Agricultural production includes the traditional areas of animal science, plant science, and farm business management.

1. Animal Science — Planned learning experiences which are concerned with the study and operations dealing with theories, principals, and practices involved in producing (breeding, feeding, care, and housing) animals and animal products for economic and other uses.

2. Plant Science — Planned learning experiences which deal with the study and operations concerned with principles and practices involved in the culture and production of agricultural plants.

3. Farm Business Management — Planned learning activities which are concerned with farm resource analysis, accounting, production, financing, resource acquisition, purchasing, farm inputs, performance records, contracts, farm marketing and maintenance. The results of these learning activities are applied to formulating decisions involved in managing a farm or ranch operation.

01.02 Agricultural Supplies/Services

This area includes subject matter and learning experiences concerned with preparing students for occupations involved in providing consumable supplies used in the production phase of agriculture, including processing, marketing, consulting and other services. Consumable supplies include agricultural chemicals, feeds, seeds and fertilizers.

01.03 Agricultural Mechanics

This area includes a combination of subject matter and activities designed to develop abilities necessary for assisting with and/or performing the common and important operations or processes concerned with the selection, operation,

maintenance, and use of agricultural power, agricultural machinery and equipment, structures and utilities, soil and water management, and agricultural mechanics shop, including kindred sales and services.

1. Agricultural Power and Machinery — A combination of subject matter and experiences designed to develop in pupils the abilities to (1) recognize and identify the fundamental principles of selection, operation, service maintenance, repair, and safety in agricultural power . . . . engines, electricity, and hydraulics; and (2) plan, install, service, assemble, adjust, operate, and repair farm machinery.

2. Agricultural Structures and Conveniences — Learning activities designed to assist pupils in developing the ability to plan, select materials for, and construct and maintain agricultural structures and conveniences.

3. Soil Management — A combination of subject matter and practical experiences designed to develop knowledge and skills concerned with surveying and classifying soils, determining cropping systems and fertilizer, conditioning, and understanding cultural practices that will result in efficient agricultural production.

4. Water Management — A combination of subject matter and practical experiences designed to develop knowledge and skills concerned with surveying, planning, laying out, constructing, using, and maintaining irrigation, drainage, water conservation, runoff, and erosion control systems, and with maintaining proper soil-water-plant relationships.

5. Agricultural Mechanic Skills — Planned learning experiences designed to develop skills, abilities, and judgments necessary to select, use, and maintain hand and power tools; to train as arc and acetylene welders; and to plan and establish home farm shops.

6. Agricultural Construction and Maintenance — A combination of subject matter and experiences designed to develop skills and abilities necessary in the planning, layout, fabrication, and maintenance of farm and other agricultural equipment, especially small, custom-built devices.

7. Agricultural Electrification — A combination of subject matter and experiences designed to provide opportunities for pupils to gain knowledge and understanding necessary to make effective use of electricity and electrical equipment on farms, ranches, and other agricultural establishments. Included for study are the principles of electricity, maintenance and operation of equipment, and safety factors related thereto.

01.04 Agricultural Products
(Processing, Inspection, and Marketing)

A combination of subject matter and learning experiences designed to teach information, processes, scientific principles, and management decisions concerned with agricultural competencies in the food and nonfood technology occupations. The groups of food products include (1) meat, fish, poultry, and eggs; (2) dairy products; (3) fruits and vegetables; (4) cereal grains; and (5) other foods and beverages. The nonfood products include cotton, tobacco, and wool. Instruction may be provided in any or all groups of these products.

1. Food Products — A combination of subject matter and learning experiences concerned with the scientific principles and operations involved in the preparation of agricultural products for sale and consumption, including home and institutional preparation of food and its nutritive value.

2. Dairy Products — A combination of subject matter and practical experiences concerned with information, processes, science, and decisions associated with milk and products derived from milk, e.g., cream, ice cream, butter and cheese.

3. Nonfood products — A combination of subject matter and experiences concerned with the information, scientific principles, processes and marketing functions associated with nonfood products, such as cotton, tobacco, and wool, as well as the industrial nonfood uses of grains and oilseeds.

01.05 Ornamental Horticulture
(Production, Processing, Marketing, and Services)

Organized subject matter and practical experiences concerned with the culture of plants used principally for ornamental or esthetic purposes. Instruction emphasizes knowledge and understanding important to establishing, maintaining, and managing ornamental horticulture enterprises.

1. Arboriculture — Organized subject matter and practical experiences concerned with the principles and practices involved in the culture and maintenance of wood plants used for decoration and shade purposes.

2. Floriculture — Organized subject matter and practical experiences which are concerned with principles and practices involved in the field or greenhouse production of flowers and the arrangement of such flowers for ornamental purposes.

3. Greenhouse Operation and Management — Organized subject matter and practical experiences which are concerned with the principles and practices involved in producing plants under glass and in other artificial environments.

4. Landscaping — Organized subject matter and practical experiences which are concerned with the principles and practices involved in locating, planting, and maintaining turf, plants, shrubs, or devices for the beautification of home grounds and other areas of human habitation and recreation.

5. Nursery Operation and Management — Organized subject matter and practical experiences which are concerned with the production of turf, plants, and/or trees for the purpose of transplanting or propagating them.

6. Turf Management — Organized subject matter and practical experiences which are concerned with the principles and practices involved in establishing, managing, and maintaining grassed areas for ornamental and/or recreational purposes.

01.06 Agricultural Resources (Conservation, Utilization, and Services)

A combination of subject matter and planned learning experiences concerned with the principles and processes involved in the conservation and/or improvement of natural resources, such as air, forests, soil, water, fish, plants, and wildlife for economic and recreational purposes. Instruction also emphasizes such factors as the establishment, management, and operation of forest lands for recreational purposes.

1. Forests — A combination of subject matter and experiences concerned with forests as living communities of plants and animals in which trees are the dominant species. Emphasis is on the multiple use of forest lands and resources.

2. Recreation — The study of recreation as one of the multiple uses of land, including emphasis of the principles of conservation. Included in instruction are examples of recreation activities which can be established, maintained and managed, such as fishing, picnicking, hunting, camping, and nature study.

3. Soil — A combination of subject matter and practical experience designed to provide opportunities for gaining knowledge and understanding concerning the principles and practices involved in maintaining soil stability and productivity, including the prevention of erosion, pollution, waterlogging, exhaustion of plant nutrients, and the accumulation of toxic salts.

4. Wildlife (Including Game Farms and Hunting Area) — A study of the principles and practices involved in the preservation and/or improvement of wildlife, such as game, fowl, and fish.

5. Water — A combination of subject matter and practical experiences concerned with water conservation practices, such as prevention of soil erosion, sedimentation, other pollution, seepage, and evaporation; flood control; aquatic weed control; and the development, conservation, and management of water supplies for agricultural, domestic, industrial, and recreational purposes.

6. Air — The study of air pollution, including the effects of agricultural activities on pollution and the effects of pollution on plants and animals.

7. Fish (Including Farms and Hatcheries) — A combination of subject matter and activities concerned with the propagation, rearing, stocking, and management of fish in public and private waters.

8. Range — The study of the theories, principles, and practices involved in the preservation and/or improvement of natural range lands.

01.07 Forestry
(Production, Processing, Management, Marketing, and Services)

A combination of subject matter and experiences concerned with the multiple use of forest lands and resources, including their management and protection.

1. Forests — (See FORESTS under AGRICULTURAL RESOURCES)

2. Forest Protection — A combination of subject matter and activities designed to provide knowledge, understanding, and judgment concerning the behavior of enemies of the forest and their control.

3. Logging (Harvesting and Transporting) — Study including observation and practical experiences concerned with the initial collective activities involved in harvesting trees as a crop in terms of not interfering with other desirable uses of the forest.

4. Wood Utilization — Organized subject matter and practical activities concerned with the many wood products of the forest. Emphasis in instruction is on the study of production, selection, grading, and marketing of forest material (wood) for multiple uses in conversion to consumer goods, e.g., paper, plywood, wallboard, plastics, and preservative-treated wood products.

5. Recreation — (See RECREATION under AGRICULTURAL RESOURCES)

6. Special Products — Organized subject matter concerned with the production and marketing of special products, e.g., maple syrup, nuts, Christmas trees, and other products. Consideration is given to the great variety of products utilized in their natural states and/or manufactured from such products.

01.99 Agriculture, Other

Include here other organized subject matter and experiences emphasized in agriculture which are not listed or classifiable in one of the above categories. (Specify.)

ORGANIZATION OF INSTRUCTION IN AGRICULTURAL EDUCATION

It is essential that instruction in agriculture be articulated; that is, it should be interrelated and interdependent in order to prevent needless repetition and bring about coordination. The aim of articulation is to facilitate the continuous and efficient education of students from one grade or level to the next.

Instruction in agriculture may vary considerably from one school system or community to another. Generally, the instruction in the 9th and 10th grades is in the "basics" of agriculture. Instruction in the 11th and 12th grades tends to be more specialized. Post-secondary agricultural instruction is even more specialized and is at the technical level. Instruction at all levels should be designed around the employability of the students.

Adult Agricultural Education

The objective of adult education in agriculture is to offer instruction and training programs which will help farmers become more efficient producers. Courses of instruction may be offered in any field of agricultural production or mechanics. Teachers of vocational agriculture are usually qualified to teach courses related to the mechanical skills and production knowledge needed by modern farmers. In some instances, the agriculture teacher may choose to hire special instructors to offer more advanced courses.

The Youth Activities Program

Future Farmers of America (FFA) Chapters and related leadership training and supervised occupational experience programs are significant integral activities which aid agricultural education in making contributions to the guidance and total general educational development of pupils. The Future Farmers of America and related leadership training permeate every aspect of the instructional program in agriculture. The foundation upon which FFA is built includes leadership and character development, sportsmanship, cooperation, service, thrift, scholarship, improved agriculture, organized recreation, citizenship, and patriotism. (For a more detailed treatment of the aims and purposes of FFA, see **Official Manual for Future Farmers of America.**)[5]

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[5]**Official Manual for Future Farmers of America** (Alexandria, Virginia: Future Farmers Supply Service, 1973).

CLASS ENROLLMENT

The facilities in agricultural education are designed and should be equipped to handle a maximum of 20 students per class period. This number is applicable to both the classroom and the shop area for secondary students. Due to the difference in methods used in adult education, this facility could accommodate a maximum of 50 adults in evening or night classes.

EQUIPMENT AND SUPPLIES

The following specifications have been included in this paper as a supplement to the sample floor plan. The supplies list represents a minimum inventory for conducting an agricultural education program. For a comprehensive list of equipment and supplies, contact the State Supervisor of Agricultural Education, State Department of Education, Jackson, Mississippi.

Facility Specifications

Gas Welding Area:

4 booths, dimensions 3' x 4' with dividers and work table 2' x 3', 30" high of concrete block construction

manifold type system with necessary plumbing through walls, with tank located along outside wall

walls painted a pleasant, light color

safety shielded lights at each booth

Classroom: Separate heat: Shop 67 degrees
Classroom 75 degrees

2 classrooms with pull-type divider, dimensions of both combined 37' x 30' lab area with sink and sufficient counter top cabinets and shelves for soil testing, etc.

double thick glass between classroom and shop to reduce shop noise in class

classroom to be air-conditioned with adequate blackboards, lights and 110-v outlets with desks and instructor's desk; the classroom area should allow for maximum use of educational media, including television; necessary book racks provided along one wall for book storage; bulletin board; wired for intercom system

Office:

dimensions — 8' x 12' with windows overlooking classroom and shop areas with instructor's desk and two chairs

with necessary lockers or bookshelves

adequate lighting and 110-v outlets

Toilets and Dressing Room:

dimensions — 12'6" x 17' for both boys and girls, with lavatory and hand washing sink with enclosed commode

with floor slightly drawn for drain and cleaning

with personal locker to accomodate the number in the expected class

fixtures to include mirror and towel dispenser

with showers

Painting and Steam Cleaning Room:

dimensions — 14' x 21'

floor drawn to center drain with dust proof door leading into shop area with glass

with safety lights and exhaust system to absorb the excess paint (either water or dry filter)

plumbed for air and water with large volume water heater

General Shop Specifications:

10 CFM compressed air provided to shop either from central unit or provided from compressor located outside building in suitable structure to protect from elements — piping and outlets provided down both sides of building and traps provided to take care of moisture

exhaust system provided to remove fumes from internal combustion engines with drops to fit over mufflers (5)

2 large overhead electrical set specification operated doors, min. 16' x 16'

entrance doors provided at large doors with light switch at both

shop floor drawn to middle to a central drain trough running the length of shop extending out back with grates for easy access

hose bibbs provided at each large door

220-v outlet provided at one overhead door (with apron) for arc welder

2 large exhaust fans to cool shop area and remove fumes

work table provided down side of building in farm machinery area with string of overhead florescent lights with 110-v outlets conveniently located above work table, pull-down drop lights installed in ceiling

community hand washing facilities provided in shop area

1 switch to control all power equipment in shop

drinking fountain provided

planers, saws, etc., that create wood dust; have vacuum dust removal from machines to outside wood chip collector

Specifications for Internal Combustion Engine Lab:

consists of six 3' x 5' divided working areas 3' in height with suitable table top so oil will not absorb and storage with drawers or doors underneath, but not to extend to edges so that leg room is available — dividers to extend above work area approximately 1'

dimensions of lab are 12' x 38' to be enclosed with double thick glass along one side for noise level, height of lab 10', with enclosed storage area above to extend to ceiling with ladders for entrance.

lab to be equipped with exhaust fan to exhaust to outside fumes from engines

floor to be drawn slight to central drain for cleaning

each individual work area to be equipped with 110-v outlets

lockers installed across 12' end to store engines and special tools when not in use

walls and ceilings to be painted of pleasant, light colors to add to attractiveness and light reflection
adequate lights to be provided with florescent lights in ceiling
adequate heat provided so when exhaust system is working the temperature will remain comfortable

Tool Room: dimensions — 8' x 19'

along 10' side, pegboard to put hand tools on; lockers along other side for small tools

walls painted an attractive, light color; well-lighted

Arc Welding Area:

5 welding booths, dimensions 3' x 4', constructed of concrete blocks with welding glass, inspection glass window for each

each booth to have safety shield 110-v light directly over working area

each booth to have work table 2' x 3', 30" high open underneath to store welder

each booth wired with 220-v welding outlets

walls on inside of booth to be painted black to reduce glare from welding

exhaust hood with fan exhaust to outside large enough to cover all booths

wall plaque provided to hang helmets, chipping hammer, wire brush and cables

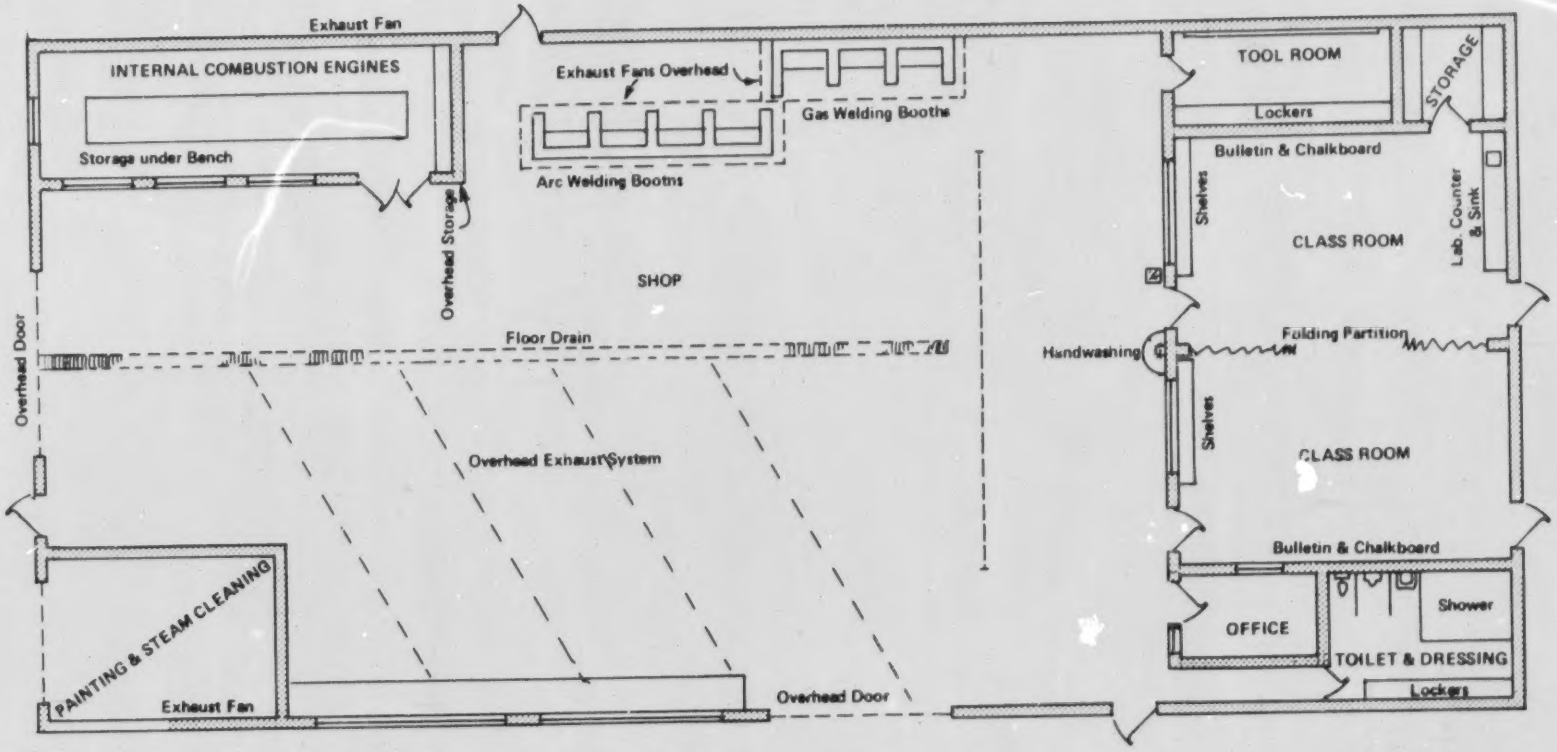
booths should not come all the way to the floor for observation

SUPPLIES LIST

welding rods and flux, lighter flint
oxygen and acetylene brazing rods
paint and thinner
cleaning fluid
lumber
wiping rags
repair on shop equipment and training aids
steam cleaning solvent — kerosene
hardware (nuts, bolts, nails, etc.)
replacement of broken or worn equipment
classroom supplies (cha[illegible], etc.)
sandpaper, emery cloth
replacement for butane torch
wire
switches, outlets, fuses
protective shop clothing and equipment
marking soap stone
first aid kit
fire extinguisher
boiled linseed oil
white gas
all need pipe fittings, one or two of each, in assorted sizes, such as stop and waste valve, ells, tees, coupling, etc.
pipe straps
gasket, toilet bowl
pipe joint compound
galvanized pipe
black pipe
conduit
steel wool
hard varnish
liquid wrench
oakum
copper tubing (assorted)
copper fittings (assorted)
heavy oil, lard oil, cutting oil, oil dry
lead
half-S trap
floor sweep
clipper blades for cattle
sanding disc for hoof sander
cattle brushes
vet supplies
saw blades
wax
paper towels and hand soap
gasoline for small engines

solder
glue
joint sealer
transmission fluid
multi-purpose wheel bearing grease
brake fluid
radiator flush
electrolyte
oil filter
baking soda
tape
paint
ignition wire
water hose clamp
condenser
spark plugs
cotter pins
belts
tire patches and glue
thermostat
hacksaw blades
pressure cap
files: flat, mill, slip taper, extra slim taper, auger bit, crosscut, chain saw
blanks, saw filing
handles, file, hammer
wedges, metal, wood
wheels, emery
powder for hard surfacing
metal for practice welding

Due to the speciality areas that can be taught in Vo-Ag, such as Forestry, Horticulture. etc., supplies that are not listed will be needed.



AGRICULTURAL EDUCATION

III. DISTRIBUTIVE EDUCATION
04.00 - 04.99

Distributive Education includes various combinations of subject matter and learning experiences related to the performance of activities that direct the flow of goods and services, including their appropriate utilization, from the producer to the consumer or user. These activities include selling, and such sales-supporting functions as buying, transporting, storing, promoting, financing, marketing research and management.

Distributive Education is comprised of programs of occupational instruction in the field of Distribution and Marketing. These programs are designed to prepare individuals to enter, progress, or improve competencies in distributive occupations. Emphasis is on the development of attitudes, skills and understandings related to marketing, merchandising, and management. Instruction is offered at the secondary, post-secondary, and adult education levels and is structured to meet the requirements for gainful employment and entrepreneurship at specified occupational levels. Distributive occupations are found in such areas of economic activity as retail and wholesale trade, finance, insurance, real estate, services and service trades, manufacturing, transportation, utilities, and communications.

PURPOSE

The major purpose of the distributive education program is to provide quality education as a part of the total program of public education in marketing, merchandising, related management and personal development. The instructional program is designed to meet the needs of all persons in all geographic areas who have entered or are preparing to enter a distributive occupation, and those continuing education in a distributive occupation or an occupation requiring competency in one or more of the marketing functions.

OBJECTIVES

The major program objectives are as follows:

1. To develop competencies needed by individuals engaged in or preparing for gainful employment and for advancement in a distributive occupation.

2. To develop an understanding and appreciation of the American private enterprise system as a cornerstone of the American democracy.

3. To develop an awareness of the civil, social and moral responsibilities of business to society.

4. To encourage and promote the use of ethical standards in business and industry.

5. To stimulate the student's interest in his chosen distributive occupational field by providing an understanding of the opportunities it offers him to be a contributing member of society.

6. To prepare distributive personnel to analyze consumer demand and to satisfy the needs and wants of consumers intelligently, efficiently and pleasantly.

7. To provide training that results in increased efficiency in distribution and marketing.

8. To develop among employers, employees and consumers a wider appreciation of the value of specifically trained personnel in distribution.

The distributive education program should be sensitive to the changes in distributive and marketing practices and procedures as they are affected by societal, economic, technical and educational developments and should adapt to such changes.

TYPES OF PROGRAMS

Types of distributive education programs listed by code numbers for distributive education as used by the U.S. Office of Education are listed below. (The following was taken from **Vocational Education and Occupations.**)

04.01 Advertising Services

Organized subject matter and learning experiences related to planning, development, placement, and evaluation tasks performed by distributive employees and management personnel in demand creation and sales promotion activities utilizing displays, merchandising aids, and mass media in such enterprises as advertising agencies, display houses, retail and wholesale establishments, and production industries.

04.02 Apparel and Accessories

Organized subject matter and learning experiences related to the variety of sales, fashion coordination, and sales-supporting tasks performed by distributive employees and management personnel in retail and wholesale establishments primarily engaged in selling clothing of all kinds, including related articles for personal wear and adornment.

04.03 Automotive

Organized subject matter and learning experiences related to the variety of sales and sales-supporting tasks performed by distributive employees and management personnel in retail, wholesale, and service establishments engaged in selling, renting, storing, or caring for cars and trucks, and in selling automotive parts, accessories and equipment.

04.04 Finance and Credit

Organized subject matter and learning experiences related to the tasks performed by distributive employees and management personnel in institutions engaged in deposit banking and related services, extending credit in the form of loans, services allied with the exchange of securities and commodities, or consumer credit and collections.

04.05 Floristry

Organized subject matter and learning experiences related to a variety of sales and sales-supporting tasks performed by distributive employees and management personnel in retail and wholesale establishments engaged in selling floral arrangements, cut flowers, growing plants, artificial plants, and related items for ornamental use.

04.06 Food Distribution

Organized subject matter and learning experiences related to a variety of sales and sales-supporting tasks performed by distributive employees and management personnel in establishments primarily engaged in selling food for home preparation and consumption, or selling a general or commodity line of food products at wholesale.

04.07 Food Services

Organized subject matter and learning experiences related to the sales and sales-supporting tasks performed by distributive employees and management personnel in establishments serving prepared foods and drinks for consumption on their own premises or at a place designated by the customer.

04.08 General Merchandise

Organized subject matter and learning experiences related to a variety of sales and sales-supporting tasks performed by distributive employees and management personnel engaged primarily in selling various types of merchandise at retail in department stores, junior department stores, variety stores, general merchandise stores, discount stores, and catalog houses.

04.09 Hardware, Building Materials, Farm and Garden Supplies,and Equipment

Organized subject matter and learning experiences related to various sales and sales-supporting tasks performed by distributive employees and management personnel in establishments engaged primarily in selling one or more of the following product lines at retail, at wholesale, or to contractors: hardware, paint, wallpaper, lumber, building materials, supplies and equipment for home construction, or farm and garden supplies and equipment.

04.10 Home Furnishings

Organized subject matter and learning experiences related to various sales and sales-supporting tasks performed by distributive employees and management personnel in retail and wholesale establishments engaged primarily in selling home furnishings, such as furniture, household appliances, floor coverings, draperies, and specialized lines of home items.

04.11 Hotel and Lodging

Organized subject matter and learning experiences related to the tasks performed by distributive employees and management personnel in establishments which provide lodging, lodging and meals, convention facilities, and other services on a year-round or seasonal basis to the general public or to an organization's membership.

04.12 Industrial Marketing

Organized subject matter and learning experiences related to the tasks performed by sales and management personnel in establishing market potentials and selling goods and services to business and institutional buyers for use in their operations.

04.13 Insurance

Organized subject matter and learning experiences related to the tasks performed by sales and management personnel for insurance carriers of all types, or by agents representing carriers and brokers dealing in the sale or placement of insurance contracts with carriers.

04.14 International Trade

Organized subject matter and learning experiences related to the tasks performed by distributive employees and management personnel in a variety of business establishments concerned with export sales, trade controls, foreign operations, attitudes, monetary problems, and other elements in international marketing.

04.15 Personal Services

Organized subject matter and learning experiences related to the tasks performed by sales and management personnel in establishments primarily engaged in providing services. Generally, these services are concerned with personal improvement and the care of a person or his apparel. Included in this category are laundries and dry cleaning establishments, shoe repair shops, funeral homes, photographic studios, and dance or art studios.

04.16 Petroleum

Organized subject matter and learning experiences related to the variety of sales and sales-supporting tasks performed by distributive employees and management personnel in retail or wholesale establishments engaged in the distribution of petroleum products.

04.17 Real Estate

Organized subject matter and learning experiences related to the tasks performed by persons who act for themselves or as agents for others in real estate brokerage or other firms engaged in buying, selling, appraising, renting, managing, and leasing of real property.

04.18 Recreation and Tourism

Organized subject matter and learning experiences relating to the variety of sales, counseling, and sales-supporting tasks performed by distributive employees and management personnel in establishments primarily engaged in providing amusement, recreation, entertainment, recreational supplies and equipment, or travel services. This instructional program is also designed for employees and management personnel engaged in other travel serving businesses who assume responsibilities for stimulating the local economy through tourism.

04.19 Transportation

Organized subject matter and learning experiences related to the physical movement of people, personal effects and products, and the sales, storing, and sales-supporting tasks performed by distributive employees and management personnel in enterprises engaged in passenger and freight transportation, public warehousing, and services incidental to transportation.

04.20 Retail Trade, Other

Include here other organized instructional programs and learning experiences emphasized in sales and sales-supporting tasks performed by distributive employees and management personnel in establishments engaged in selling merchandise purchased for resale to customers for personal, household, business or farm use, which are not listed above.

04.31 Wholesale Trade, Other

Include here other instructional programs and learning experiences emphasized in sales and sales-supporting tasks performed by distributive employees and management personnel in places of business engaged primarily in selling goods to retailers, industrial, commercial, institutional and professional users, or in businesses engaged in bringing buyer and seller together, which are not listed above.

04.99 Distributive Education, Other

Include here other organized instructional programs and learning experiences, emphasized in marketing functions performed by employees, managers and/or proprietors in establishments engaged in selling products or providing services to individuals and business establishments which are not classifiable as either retail or wholesale in nature and function. (Specify)

ORGANIZATION OF INSTRUCTION IN DISTRIBUTIVE EDUCATION

It is essential that instruction in distributive education be articulated; that is, it should be interrelated and interdependent to avoid needless repetition. It should be coordinated to facilitate the continuous and efficient education of students from one grade or level to the next.

The instructional program in distributive education may vary from one school system to another. Generally, the instruction in the 11th grade utilizes the project method to teach principles and skills on the job entry level.

Project training is a "participation experience" program which combines vocational instruction in the classroom with supervised and coordinated laboratory activities related to the distributive occupational field in which the student is preparing for employment. The learning outcomes expected of students enrolled in the project method classes are the same as for students enrolled in the cooperative program.

Since the project method necessitates more emphasis on student involvement in simulated work experiences in a laboratory setting, adequate facilities and space should be provided to make the instructional program as realistic as possible. The classroom laboratory facility should be provided with the same equipment and facilities that are used in the cooperative program and in the training stations in which the cooperative program student works.

Curriculum materials for the project method of instruction in distributive education are available from the Curriculum Coordinating Unit at Mississippi State University. The materials consist of courses of study with proposed units of instruction and reference materials to accompany the units. A set of projects for student use is also available. The projects are included in the course of study and are also available under separate binding.

The cooperative plan in distributive education utilizes the work situation as a laboratory setting in which occupational competencies are developed through supervised work experiences. In the school classroom, the student receives instruction which is related to his occupation. The instructional program consists of two elements: (1) general related instruction — the knowledge, understanding and attitudes needed by all workers; and (2) directly related instruction which consists of the concepts and skills required for successful job performance.

Generally, instruction in the 12th grade utilizes study guides. Each student pursues an individual course of study as outlined in the study guide and which is correlated with his on-the-job training. The study guides are designed to teach the competencies needed by a successful worker in a specific job. Reference books for use with the study guides are available from the Curriculum Coordinating Unit.

The Youth Activities Program

Opportunities to develop leadership, social and civic awareness, and increased understanding of the world of work in distribution and marketing are provided through the Distributive Education Clubs of America, the youth organization for distributive education pupils. As an integral part of the instructional program, pupils engage in activities that extend their interests, skills, and knowledge in selected aspects of distribution and marketing. Such organized activities under appropriate supervision are referred to as cocurricular activities.

Space and Class Size

The space provided for facilities in a distributive education program will depend upon the number of students to be served, the type of distributive education program needed, the extent to which the facility will be used by the community for adult classes, and which of the following floor plans are selected. The program might suggest a combination of the following floor plans.

Floor Plan Number 1 is designed to serve the needs of a class of 18 students. The floor plan provides space for the recommended facilities and equipment necessary to conduct a successful program of instruction. (See legend on page opposite plan.) The overall dimensions of the facility are 56 x 30 feet, for a total of 1680 square feet of space. This represents 93 square feet per student. The space per student includes the area occupied by equipment and furniture, which consequently would reduce the actual amount of available space per student.

Floor Plan Numbers 2 and 3 are designed and recommended for classes composed of 24 students. The overall dimensions of the facility in Plan 2 are 36 x 50 feet, for a total of 1800 square feet of floor space, or 75 square feet per student. The overall dimensions of the facility in Plan 3 are 31' 6" x 50' 6". This provides for approximately 1600 square feet of floor space for a class of 24 students, or a total of 67 square feet per student.

MINIMUM SUPPLY LIST FOR MARKETING

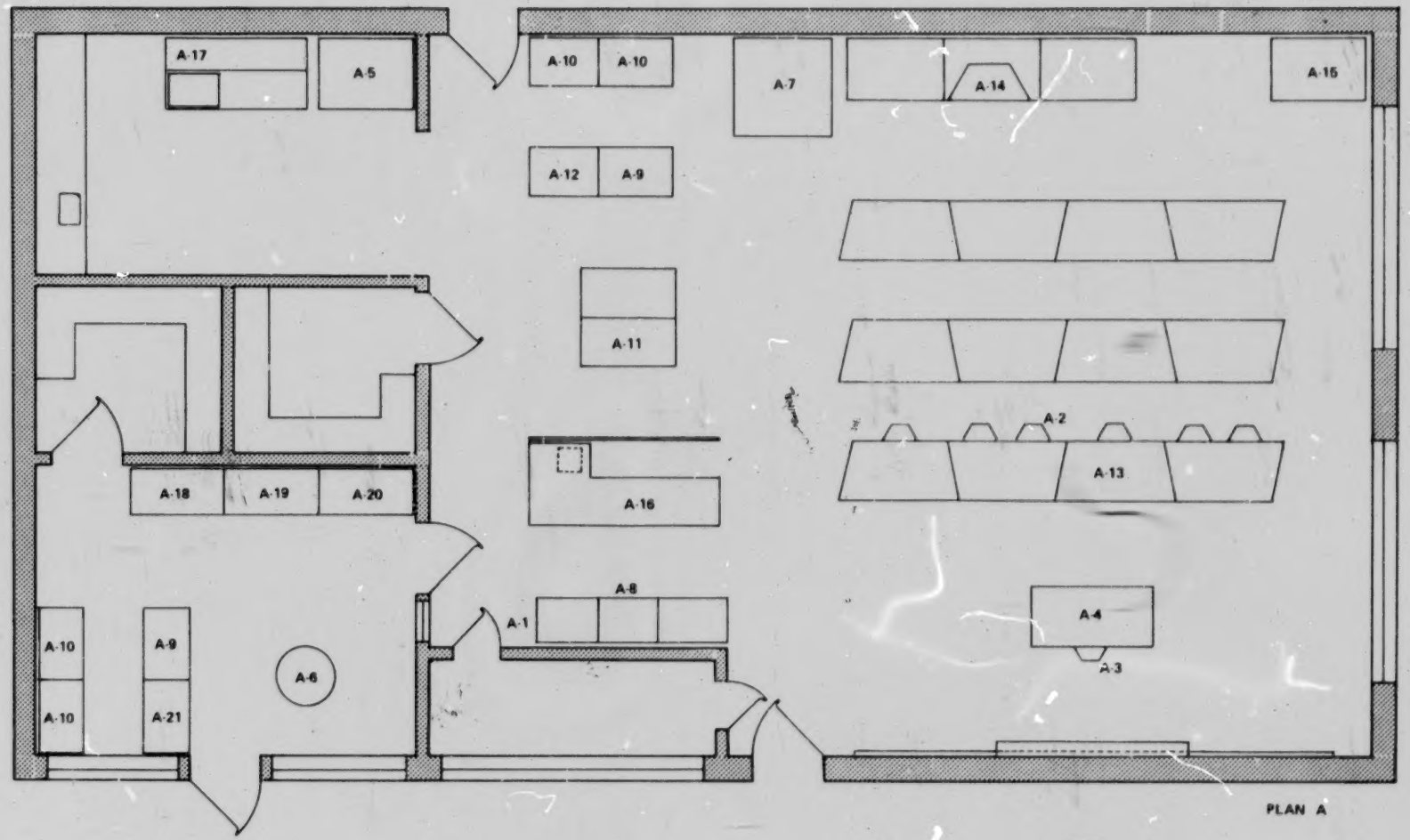
The amount for each item will vary according to size of the program.

1. Colored paper, cloth, cardboard for display construction
2. Wrapping and packaging supplies
3. Poster boards
4. Painting and lettering brushes

5. Spray paint
6. Felt pens
7. Cleaning fluid and other cleaning supplies
8. Crepe paper
9. Advertising mats
10. T squares and triangles
11. Bookkeeping forms
12. Business briefs and trade publications
13. Office supplies for teacher

LEGEND FOR PLAN A

A-1	Shopping cart
A-2	Student stacking chairs
A-3	Side chairs
A-4	Double pedestal desk
A-5	Utility table
A-6	Revolving paperback book displayer
A-7	Inside display window
A-8	Free standing supermarket wall shelving unit
A-9	Full vision showcase
A-10	Wall display case
A-11	Free standing supermarket island shelving unit
A-12	Half vision showcase
A-13	Non-folding trapezoidal table
A-14	Enclosed mirrored alcove unit
A-15	Tiered magazine — periodical displayer
A-16	Manual checkout counter
A-17	Sign machine bench
A-18	Free standing wall merchandising unit
A-19	Free standing wall merchandising unit
A-20	Free standing wall merchandising unit
A-21	Wrap counter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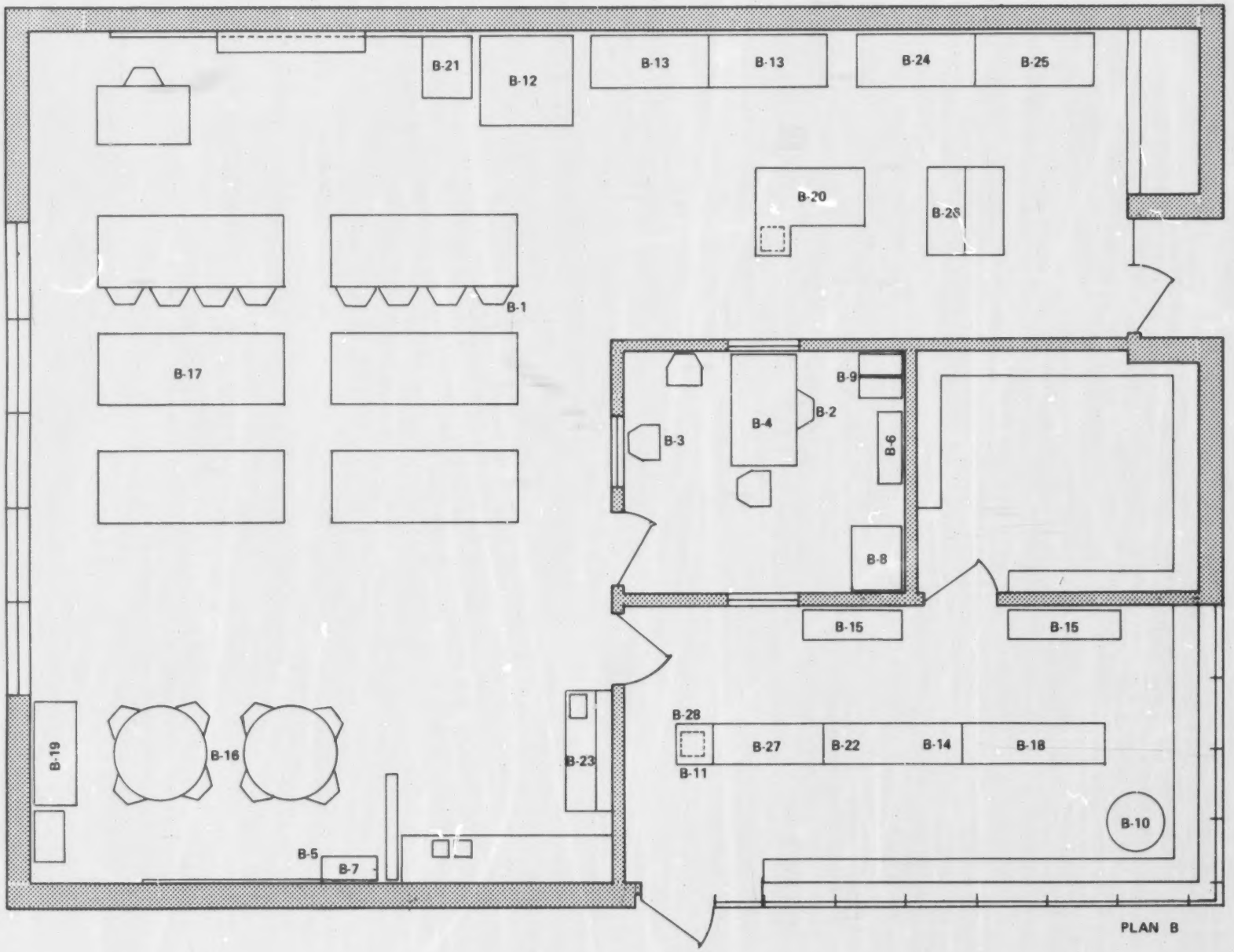
A-21

PLAN A

LEGEND FOR PLAN B

B-1	Stuoent stacking chairs
B-2	Swivel armchair
B-3	Side chair
B-4	Double pedestal desk
B-5	End panels
B-6	Counter high bookcase
B-7	Full height bookcase
B-8	Combination storage and wardrobe cabinet
B-9	Letter size filing cabinet
B-10	Revolving paperback book displayer
B-11	Cash register stand
B-12	Inside display window
B-13	Free standing supermarket wall shelving unit
B-14	Full vision showcase
B-15	Wall display case
B-16	Non-folding round table
B-17	Non-folding rectangular table
B-18	Half vision showcase
B-19	Tiered magazine — periodical displayer
B-20	Manual checkout counter
B-21	Mannequin feature platform
B-22	Open merchandise counter
B-23	Sign machine bench
B-24	Free standing wall merchandising unit
B-25	Free standing wall merchandising unit
B-26	Double sided free standing gondola merchandising unit
B-27	Wrap Counter
B-28	Cash register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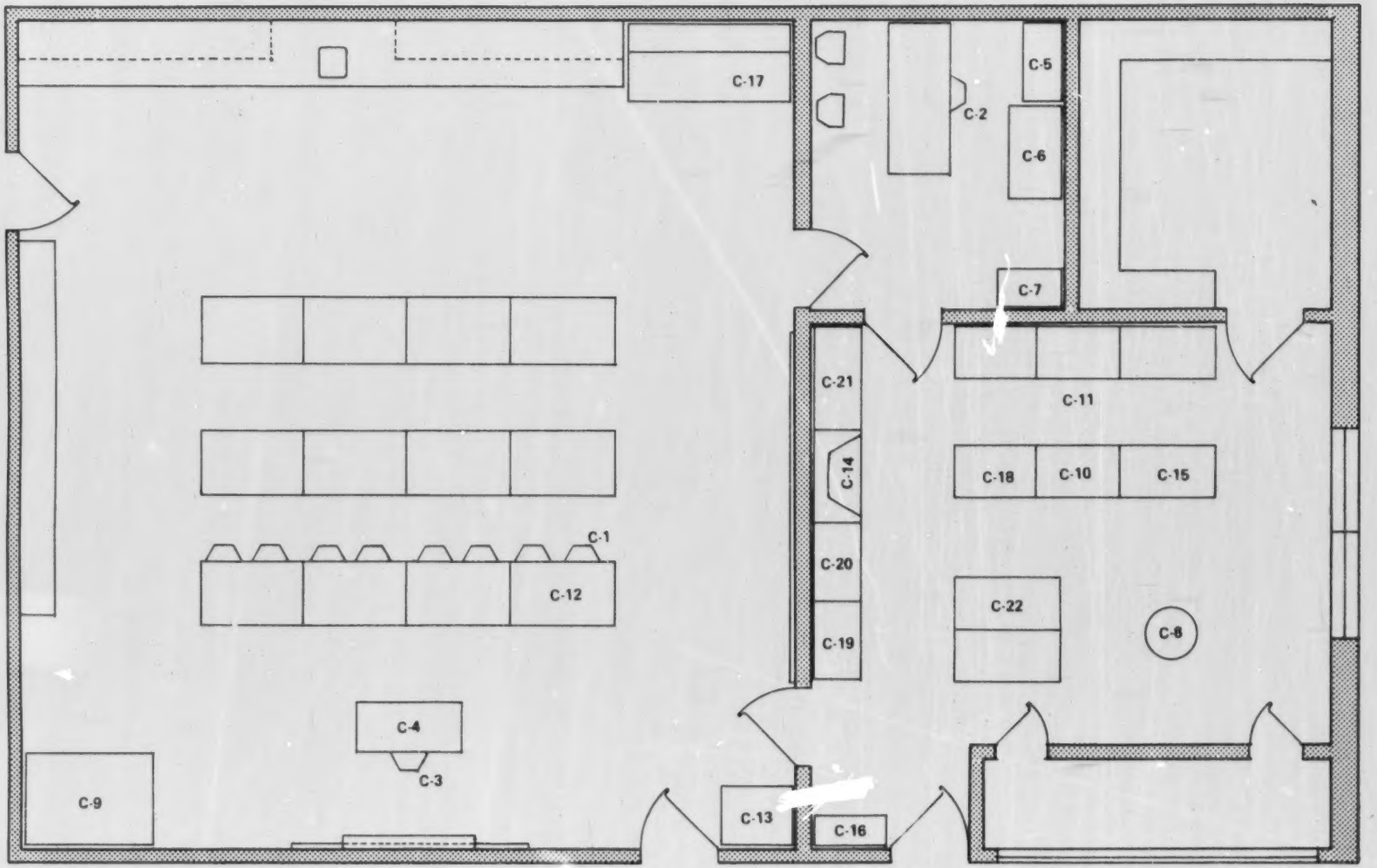
B-7

PLAN B

LEGEND FOR PLAN C

C-1	Student stacking chairs
C-2	Swivel armchair
C-3	Side chair
C-4	Double pedestal desk
C-5	Counter high bookcase
C-6	Combination storage and wardrobe cabinet
C-7	Letter size filing cabinet
C-8	Revolving paperback book displayer
C-9	Inside display window
C-10	Full vision showcase
C-11	Wall display case
C-12	Non-folding retangular table
C-13	Tiered magazine — periodical displayer
C-14	Enclosed mirrored alcove unit
C-15	Open merchandise counter
C-16	Shadow box
C-17	Sign machine bench
C-18	Wrap counter
C-19	Free standing wall merchandising unit
C-20	Free standing wall merchandising unit
C-21	Free standing wall merchandising unit
C-22	Double sided free standing gondola merchandising unit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PLAN C

IV. CONSUMER AND HOMEMAKING EDUCATION
09.01 - 09.0299

Home economics comprises the group of related courses or units of instruction organized for purposes of enabling pupils to acquire knowledge and develop understanding, attitudes, and skills relevant to (a) personal, home, and family life, and (b) occupational preparation using the knowledge and skills of home economics. Subject matter areas include child development; family relationships; food and nutrition; clothing and textiles; family economics and home management; housing, home furnishings and equipment; and family health. The subject matter of home economics also includes concepts drawn from the natural and social sciences and the humanities.

Home economics education at the secondary level consists of two types of instruction: (1) consumer and homemaking education; and (2) occupational home economics. The areas of instruction in consumer and homemaking education are listed in the 09.01 - 09.0199 code categories. These areas of instruction are concerned with preparation for family living. Courses are of a general survey type which would be classified as preparatory and prerequisite to the occupational home economics curriculum.

The areas of instruction in the occupational home economics program are included in the 09.02 - 09.0299 code categories. These areas of instruction are concerned with preparing students to enter the world of work in home economics-related careers or occupations. Occupational home economics teaches semiskilled or job entry-level skills.

PURPOSE

Consumer and homemaking education provides instruction which enables families to improve the quality of their family life. The objective is to teach people to accept and manage social and technological change.

The curriculum is concerned with understandings, attitudes and appreciations of the fundamental values of homemaking. It is concerned also with development of skills necessary to solve the problems of homemaking. The nature and content of instruction are derived from the needs and concerns of individuals and families served, with consideration given to the maturity and experience of individuals enrolled.

The total program of instruction is sufficiently intensive and extensive to enable the individual served to develop competencies necessary for effective participation in homemaking and in community activities affecting the home.

OBJECTIVES

1. To prepare youth and adults for the dual role of homemaker and wage earner.
2. To give greater consideration to social and cultural conditions and needs, especially in economically depressed areas.
3. To prepare youth and adults for professional leadership.
4. To provide consumer education.
5. To prepare persons for work in the home.

The scope and sequence of offerings in the secondary school are listed in the chart on the following page.

SCOPE OF OFFERINGS IN CONSUMER AND HOMEMAKING EDUCATION

Revised July, 1971

		CONSUMER AND HOMEMAKING	
*Basic	Advanced	**Specialized	Non-Prerequisite Cons. & Home. Courses
Grades 9-10 1 hour daily 1 unit credit	Grades 10-12 1 hour daily 1 unit credit	Grades 11-12 1 hour daily ½-1 unit credit	Grades 9-12 1 hour daily ½-1 unit credit
Course Content Area of Instruction	Course Content Area of Instruction	Course Content Area of Instruction	Course Content — One or more of the following courses may be offered:
1. Clothing & Textiles 2. Child Development 3. Foods & Nutrition 4. Management & Family Economics 5. Housing 6. Personal & Family Living *Basic Home Economics is a Prerequisite to Advanced Home Economics	1. Clothing & Textiles 2. Child Development 3. Foods & Nutrition 4. Management & Family Economics 5. Housing 6. Personal & Family Living	Course for depth teaching in specific areas of Home Ec. scheduled for 1 or 2 semesters for pupils who have both Basic and Advanced Home Ec. **Basic and Advanced Home Ec. are Prerequisites to Specialized Home Economics and Occupational Home Economics	Personal Development and Mangagement offered to enrollees preparing for employment. Personal and Family Living for boys and girls, grades 10-12. Basic Home Economics (grades 11-12 students witn no previous training in Home Economics.) Boy's Classes, grades 9-12.

TYPES OF CONSUMER AND HOMEMAKING EDUCATION PROGRAMS

Types of consumer and homemaking education programs are listed below by code number for home economics occupations as used by the Office of Education. (Instructional programs 09.01 - 09.199 are not specifically directed toward preparation for gainful employment.) The following was taken from **Vocational Education And Occupations.**

A. Homemaking: Preparation for Personal, Home, and Family Living

The courses or units of instruction in home economics which emphasize acquisition of knowledge and the development of understandings, attitudes, and skills relevant to personal, home, and family life are taught in the areas described below.

09.0101 Comprehensive Homemaking or Home Economics

Instruction which derives content from a combination of the various areas of homemaking (as described by the items listed below) and emphasizes basic principles and interrelationships among these areas.

09.0102 Child Development

The study of children — their physical, mental, emotional, and social growth and development; and their care and guidance. In practice, content draws on aspects of the social and biological sciences.

09.0103 Clothing and Textiles

The study of clothing and textiles, including the significance of these to the individual and family, and the nature, acquisition, and uses of textiles and clothing products. Planned experiences in the selection, construction, maintenance, and alteration of clothing and other textile products are usually provided.

09.0104 Consumer Education

Emphasis in home economics is on consumer education as it relates to management of a home and to the welfare of family members.

09.0105 Family Health

The study of related aspects of health in family living, with special emphasis on nutrition, emotional health, the relationship of the health of an individual to the well-being of the family, the prevention of illness, and the management and elementary skills in caring for the ill and convalescent in the home.

09.0106 Family Relations

The study of the nature, functions, and significance of human relationships in the family. The subject matter includes concepts and principles related to various family living conditions, the establishment and maintenance of relationships, and the preparation for marriage and family life. These designated aspects of family relationships emphasize the universality of families, the uniqueness of individuals and families, the development and socialization of the individual, and the ways to meet the variety of needs and interests of family members.

09.0107 Foods and Nutrition

The study of food and its role in personal and family living, including the basic principles of health, food management, and economics. In practice, emphasis is frequently placed on meal management as a means of understanding the significance and nature of food, its care, and its preparation for individuals and families.

09.0108 Home Management

The study of the complexities and processes involved in formulating goals, making decisions, and effectively using and controlling human and other resources for establishing and maintaining a home and family. The subject matter provides for a variety of home management considerations, such as the societal and economic influences on individual and family management, values, goals and standards, family economics, and the organization of activities in the home.

09.0109 Housing and Home Furnishings

The study designed to develop judgment needed for creating a favorable environment for family living. Attention is given to complex housing and home furnishing considerations, including the influence of housing on people; types and costs of housing; interior design; the care, maintenance, and improvement of homes and furnishings; and the relation of resources to family needs.

09.0199 Homemaking, Other

Included in this program is any organized subject matter emphasized in homemaking which is not listed or classified in other programs in the 09.01 code category.

CLASS ENROLLMENT

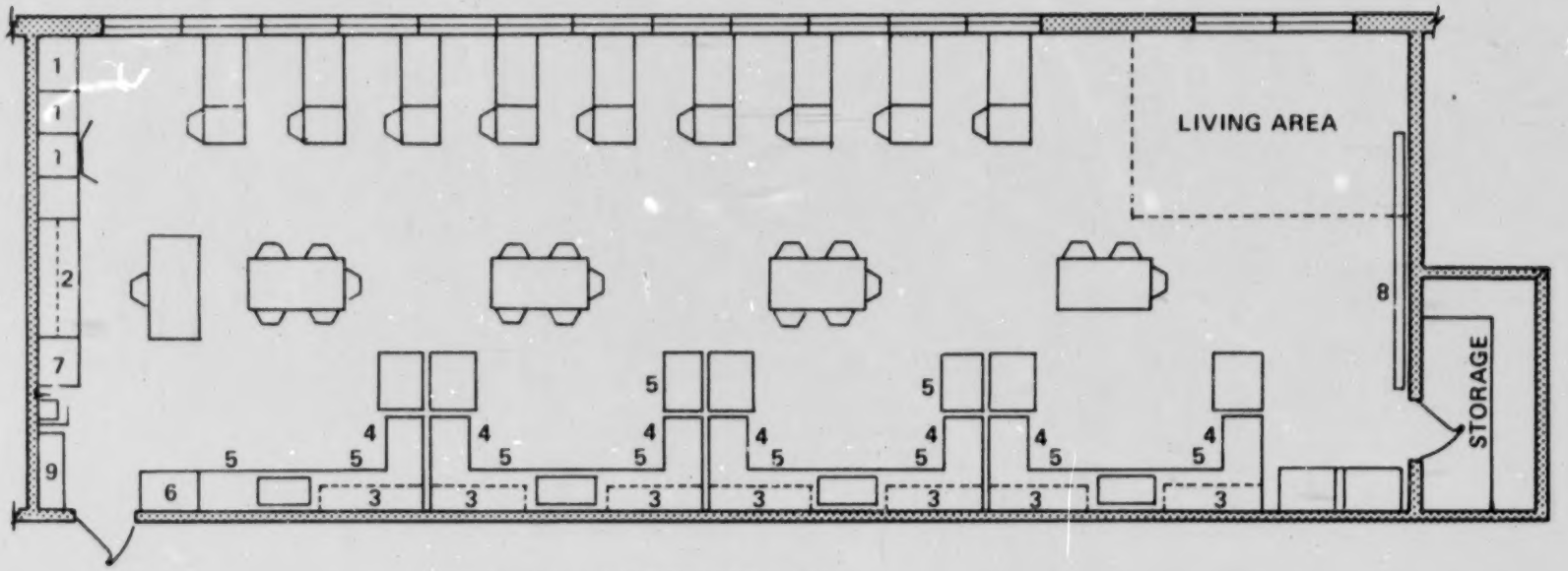
Due to the nature of the courses, the limited space, and the number of appliances that can be provided for a combination laboratory, the optimum number of students per class is 15.

EQUIPMENT AND SUPPLIES

For a complete listing of equipment and supplies for consumer and homemaking education, contact the State Supervisor, Home Economics Education, State Department of Education, Jackson, Mississippi.

LEGEND

1. Tote tray storage
2. Tall wardrobe storage
3. Wall cabinet — storage
4. All drawer base cabinet
5. Drawer and cupboard base
6. Tall general storage
7. Ironing board and iron storage
8. 9' chalkboard and 4' tackboard, open bookshelves under
9. Cabinet for students' books



COMBINATION LAB

B. Occupational Preparation

Occupational preparation includes courses or units of instruction emphasizing the acquisition of competencies needed for getting and holding a job and/or preparing for advancement in an occupational area using home economics knowledge and skills. Instructional content is selected from home economics subject areas to meet the unique requirements in field, laboratory, and work experience. Occupations include those which provide (1) services to families in the home and similar services to others in group situations; (2) assistance to professional home economists and professionals in fields related to home economics in industries, agencies, and organizations; and (3) other services and/or assistance directly related to one or more home economics subject-matter areas.

PURPOSE

The purpose of the occupational home economics program is to prepare students to enter the world of work in home economics-related careers or occupations. The skills required in these occupations will enable individuals to qualify for entry-level jobs, and an open-ended approach to instruction will allow students to develop skills that will qualify them for jobs beyond entry level. There will be avenues of promotions and advancement when successful job performance is followed by additional preparation by the students according to their interests, aptitudes and abilities. The following examples will show that occupations listed as semiskilled or entry-level are not dead-end jobs.

Selected Occupations Related to Home Economics

Three Skill Levels

Semiskilled or Entry-Level	Skilled or Technical Level	Professional Specialized Level
Child Care Worker	Child Care Assistant	Child Care Supervisor
Food Service Worker	Food Service Assistant	Food Service Supervisor
Decorator Aide	Home Furnishings Assistant	Interior Decorator

OBJECTIVES

1. To provide in-school instruction and on-the-job learning experiences to meet individual student career-development needs.

2. To offer training in occupations that will meet individual needs within diverse groups.

3. To provide occupational training appropriate to the learner's abilities and needs.

4. To provide realistic preparation for the world of work.

5. To incorporate occupational training as an integral part of the total school program.

6. To continually analyze the employment requirements and demands of the occupations for which students are being trained.

7. To identify social and economic needs of students, as well as the necessary skills and related knowledge.

8. To prepare students for home economics related job entry-level occupations.

9. To provide competent instruction in each occupational area.

10. To provide the opportunity for the trainee to supplement training with work experience.

11. To encourage and contribute to the total development of the whole individual.

TYPES OF OCCUPATIONAL PREPARATION PROGRAMS

In the secondary schools in Mississippi, there are two types of occupational programs included in vocational home economics education. (1) The cooperative occupational program combines one hour a day of classroom instruction with fifteen hours a week on-the-job training. (2) The simulated occupational program combines classroom instruction and simulated work experience in a laboratory for two consecutive hours each day.

09.0201 Care and Guidance of Children

Preparation for various kinds of employment related to child care centers and young children,e.g., assisting directors of child day care centers or nursery schools, assisting with activities on playgrounds and in recreation centers, and caring for children in homes and in such public places as stores, playgrounds, recreation centers, and transportation terminals.

Purpose

The purpose of the two-year course is to prepare students for employment as assistants in child care centers, as aids for kindergarten teachers, as helpers in Head Start programs, or for employment in private homes.

Experience in caring for children is provided both in the child care laboratory and in outside child care centers. Through planned observation and participation under qualified supervision, students will have experiences with children in guiding play activities, assisting at meal time, assisting with supervision of creative activities and caring for clothes and play equipment.

The course may be scheduled for one to three hours daily during the school year in high schools or vocational centers for a period of two years. The course will carry one or two units of credit per year depending on class period length. The State Supervisor of Home Economics can provide current data on programs and accreditation.

Objectives

1. To become aware of possible child care services.
2. To become acquainted with facilities needed for group care of children.
3. To understand the personal qualities which contribute to success in the field of child development.
4. To develop personal characteristics necessary for success in child care.
5. To develop an understanding of the basic principles and methods of caring for and guiding children at their different levels.
6. To develop ability to assist with activities of children of various age groups.
7. To gain practical work experiences in assisting with children's activities and routines.

Class Enrollment

Due to the various learning experiences and activities the trainees are to be involved in during the course, 15 is considered the maximum number to be enrolled in the program.

Equipment and Supplies

Adequate facilities, equipment and supplies shall be provided for training of students enrolled in the course. The following list of supplies is considered to be the minimum for a beginning program. A complete list of supplies and equipment may be obtained from the State Supervisor of Home Economics Education, State Department of Education, P. O. Box 771, Jackson, Mississippi.

PLAY MATERIALS

2 sets	Creative Set of blocks — regular shape rather than special shape. May get seconds or economy set.
1 set	Hollow building blocks — (large) — For outdoor use, but also effective for indoor play. May try introductory set of 10 pieces. Number dependent on number of children.
2	Trucks — Police car-type — hardwood construction.
2	Auto — hardwood construction.
2	Bus — heavy wood construction, rubber wheels.
	Manipulative
	Simple puzzles — 3-4 pieces
	Stack toys, Stack rings — graduated sizes.
	Wooden beads for stringing.
	Art Activities
2	Double easels — (may need to cut legs for lower height).
1 per child	Easel brushes — 1" wide, 9" long
1 per child	Scissors — blunted ends — (Include 4-5 left-handed).
	Supplies —
	Colored poster chalk
	Crayons — crayonex — large size
	Paste (rather than glue)
	Dry Tempera — Color tone —(red, yellow, green, brown, black and white).
	Paper — 12" x 24" Construction paper (pkg. all one color rather than mixed).
	Finger paint paper (may be used — white news print).
	Large roll plain brown paper
2 or 3	Scissors for teachers — heavier quality

Recommended number for 10-12 children	Items
	<u>Housekeeping Activities</u>
1	Mirror — metal dress-up — unbreakable 12" x 48"
1	Stove and sink combination — waterproof — work top
1	Child size refrigerator — birch, plywood
2	Housecleaning set — broom, mop, dust pan
2	Rocking chairs — 11" from floor
2	Tea set, aluminum
2	Cutlery set, aluminum
2	Telephone — wood
3	Child size cloth dolls — washable
2	Baby dolls — rubber or plastic
1	Child size dresser — plywood construction
1	Small table and chairs
	<u>Quiet Activities</u>
1	Record player — simple type (may use popular records, as well as children's)
	Books and simple games
	Small table and chairs for sitting while looking at books
	<u>Outdoor</u>
1	Sand and water table (may be built locally) should be easy to move
1	Sandbox — 10" x 10'
	Assorted sand play items
3	ladders 3' x 14", 4' x 14", 5' x 14"
3	cleated boards — 4' x 10", 6' x 10", 9' x 10"
1	balanced board — polished hardwood board with cleats at each end
2	Saw horse — 12" height x 24" length 18" height x 24" length

Items such as tires for tire swings, empty telephone cable spools (cut in half for tables or for use for rolling).

Facility Specifications

The facilities and type of activities and learning experiences to be provided for child care in the school situation will vary depending on community resources. In most instances, the department will provide necessary equipment with supplementary work experiences in the community set up as an important part of the program.

Furnishings and space for students and instructor will vary. Chair desks in a separate work area or room will be acceptable. One or more work tables with chairs should be provided for individual or group work for preparation of materials.

Although some programs may follow the plan for having students get experiences in food serving and preparation in places, such as the school cafeteria, day care centers and nursery schools, it is recommended that space be provided in the department for these experiences. Preparation of food can be in the foods laboratory. In order to meet the state requirements for health and sanitation, the following standards must be met:

- Food must be prepared and served in a separate room with a permanent wall partition (folding walls not acceptable).

  No other activities will be carried on in this room.

- Equipment required

  Automatic Dishwasher (180°)
  Pre-rinse device in front of dishwasher is equipped with such a device.

  Two Compartment Sink
  A school cafeteria sink is 24" x 27" x 14". The one for child care can be smaller, but should be large enough for submerging largest pots and pans.

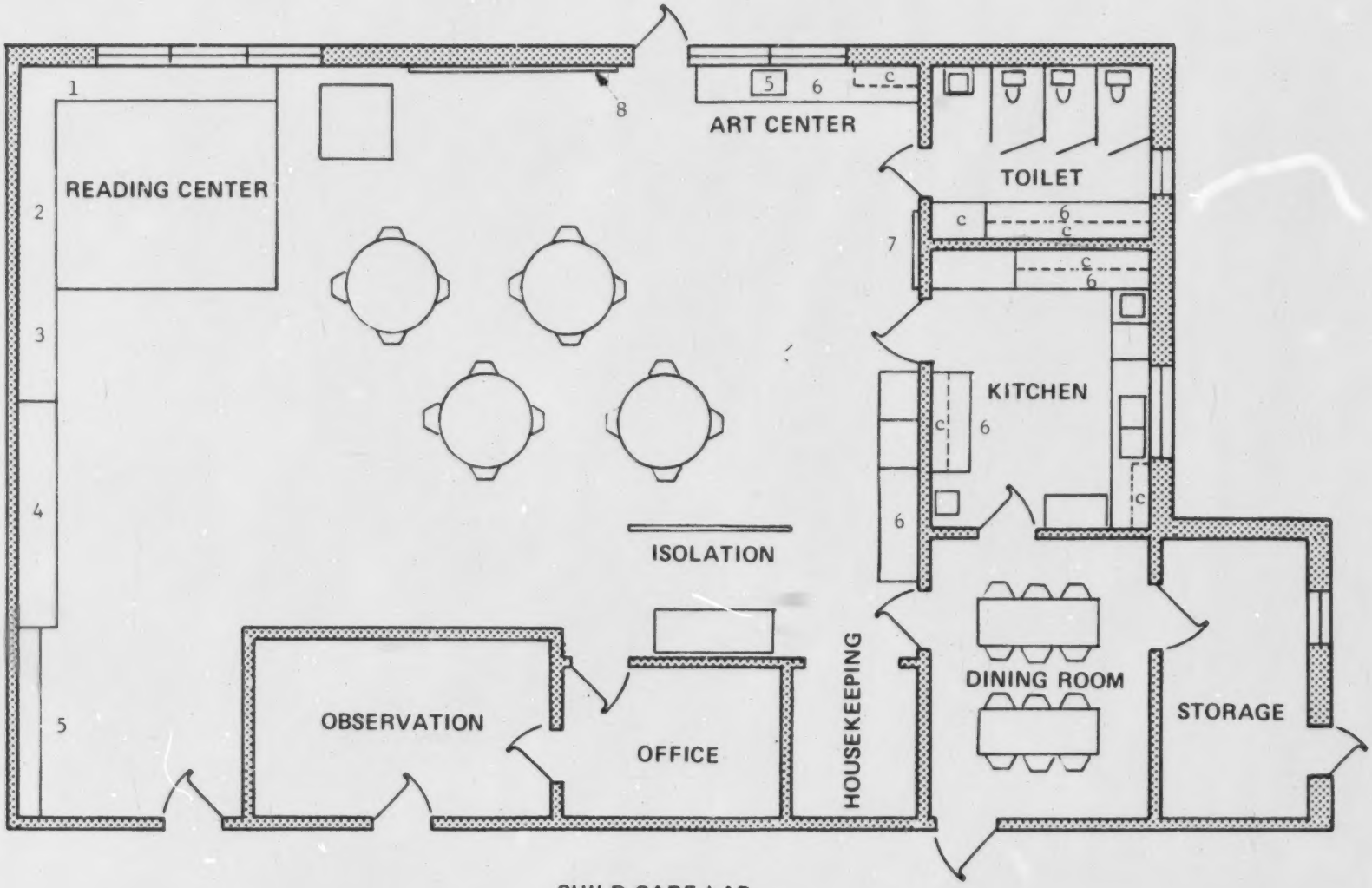
  One Compartment Sink
  For washing vegetables. Of no special size, but separate from dishwashing. This sink can be a continuation of the two compartment sink, with a small work space between.

  Lavatory for washing hands must be located in the food preparation area.

For a complete listing of equipment, materials, and supplies, contact the State Supervisor of Home Economics Education.

LEGEND

1. Undercounter storage for books and toys
2. Piano
3. Record player
4. Cot storage
5. Lockers for wraps
6. Undercounter storage
7. Bulletin board
8. Chalkboard
9. Upper wall cabinet



CHILD CARE LAB

09.0202 Clothing Management, Production, and Services

Preparation for employment concerned with clothing and textiles, e.g., fitting and altering ready-made garments, custom tailoring and dressmaking, laundry-dry cleaning work, demonstration work, and technical work in business and industry.

Purpose

The two-year course in clothing services is designed to prepare youth for entry into jobs which require less than technical knowledge. In most instances, the students will be employed under the supervision of experienced personnel. Previous experience in home economics is desirable.

Opportunities will be provided for students to get experience in fitting and making simple alterations of ready-made garments, constructing garments, and performing laundry and dry cleaning tasks in the laboratory and on the job. This course will include basic instruction and use of power sewing machines and other commercial equipment as related to clothing services.

The benefits received from experience in full-time and part-time self-employment will be stressed. Commercial employment in the various areas of clothing services will also be emphasized.

The course may be scheduled for one to three hours daily during the school year in either the high school or vocational center. The student may receive one or two units of credit per year depending on class period length.

Objectives

1. To become aware of job opportunities in the area of clothing services.
2. To understand the requirements and expectations of the various types of employment in clothing services.
3. To understand employment practices related to commercial sewing.
4. To learn to use and take care of the equipment used in commercial sewing.
5. To develop personal characteristics, knowledge, skills and attitudes which will enable one to become employable in various types of clothing services.

Class Enrollment

Due to the nature of the course and the learning experiences and activities that the trainees will be involved in, the facility should be planned and equipped for 16 to 20 students.

Equipment and Supplies

Adequate facilities, equipment and supplies should be provided for training of the students enrolled in the course. The following supplies list is considered to be a minimum for conducting a class of 16 to 20 students. For a comprehensive list of facilities, equipment and supplies, contact the State Supervisor of Home Economics Education, State Department of Education, Jackson, Mississippi.

Instructional Equipment and Supplies — To Be Purchased with State Funds

	Quantity	Item
-	1	Slide Projector
-	1	Projection Screen
-	1	Filmstrip Projector with Case
-	1	Overhead Projector
-	1	Projector Table — mobile
-	1	Record Player
-	1	Tape Recorder
-	1	Storage Cabinet for Filmstrips and Scripts
-	1	Flannel Board
-	1	Folding Easel — sturdy aluminum

Equipment and Supplies — To Be Purchased with Local Funds

	Quantity	Item
-	2 boxes — 100 per box	Pins — different types
-	2 boxes — 100 per box	Needles — hand and machine
-	12 packages	Tracing Paper — assortment of colors
-	20 yards	Fabric — demonstration purposes
-	6 boxes	Tailor's Chalk — assortment of colors
-	6 boxes	Tailor's Chalk Pencils
-	2 dozen	Patterns — various types and sizes for demonstration purposes
-	5	Holders with Beeswax
-	12 packages	Iron-On Mending Tape — assortment of colors
-	12	Press Cloths-- different types
-	1	Pencil Sharpener — electrical or manual
-	1	Stapler
-	1 box	Staples
-	1	Hole Puncher
-	12	Bulletin Boxes — approximately 10" x 7" x 4"

Filing Supplies — To Be Purchased with Local Funds

-	2 sets	Metal Tabbed Alphabetical Guides — letter size with bold headings in two rows at left
-	200	Folders — letter-size with tabs in center position
-	12	Letter-Size Blank Metal Tabbed Guides — for making indexes and separating areas with tab at left

Quantity	Item
1 box of 500	Colored Gummed Folder Labels
1 box of 500	White Gummed Folder Labels
50	Manila Envelopes — smaller size than the folders, to be glued inside folders to hold small clippings and pictures

Cleaning Supplies — To Be Purchased with Local Funds

2-4	Sponge Mops
2-4	Brooms — medium weight
2-3	Push Brooms — horsehair
2-2	Dust Mops — with removable head
12	Dust Cloths — treated cheesecloth
2-4	Dust Pans

Miscellaneous Supplies — To Be Purchased with Local Funds

1 set per student	Sewing Exercises — order from Factory Service, P.O. Box 354, Columbia, S.C. 29303
1 set per student	Cloth Exercises — #1, 2, 4, 5, 6 — order from Factory Service, P. O. Box 354, Columbia, S.C. 29303
1 set per student	Pre-Threading Paper Exercises #1, 2, 4, 5, 6 — order from Factory Service, P.O. Box 354, Columbia, S.C. 29303
To be determined on basis of need	Fabric Cut Pieces — secure from local sewing factories and plants

NOTE: This equipment list is to be used as a guide only. We are not suggesting that the equipment list hereon will fit all programs for industrial sewing. This is for Occupational Clothing Services and Home Furnishing Services.

The following facilities are listed in order for them to be considered in the building specifications.

Facility Specifications

1. Adequate wiring for 1 to 3 power sewing machines and heavy-duty pressing iron.

2. Adequate wiring for 10-12 family type sewing machines and a nearby cutting and pressing table.

3. One or two lavatories for washing hands — to be placed in laboratory or enclosed grooming area.

   a. Mirrors over lavatories
   b. Sturdy paper towel holders
   c. Lavatory cabinet finished with rolled formica or similar material

4. Storage Cabinets —

   a. One to three tote tray cabinets, may be high or low or combination of both. Should take care of 40 or more tote trays. High cabinet approximately 62" long - 22" wide - 82" high. Low cabinet approximately 47" long - 22" wide - 35" high.

   b. Two cabinets for hanging garments under construction, approximately 62" long - 22" wide - 82" high.

   c. Two cabinets for hanging draperies under construction, approximately 62" long - 22" wide - 82" high.

   d. One cabinet with adjustable shelves to take care of completed draperies, approximately 62" long - 22" wide - 82" high.

   e. One cabinet for storage of textiles used in drapery and slipcover construction, and storage of flower containers, pictures and other items, approximately 62" long - 22" wide - 82" high.

   f. One cleaning cabinet for storage of brooms, mops, vacuum cleaner, cleaning supplies, ironing boards, irons and small sewing equipment, approximately 62" long - 22" wide - 82" high.

   g. One or two cabinets for storage of instructional materials, charts, posters and projectors, approximately 62" long - 22" wide - 82" high.

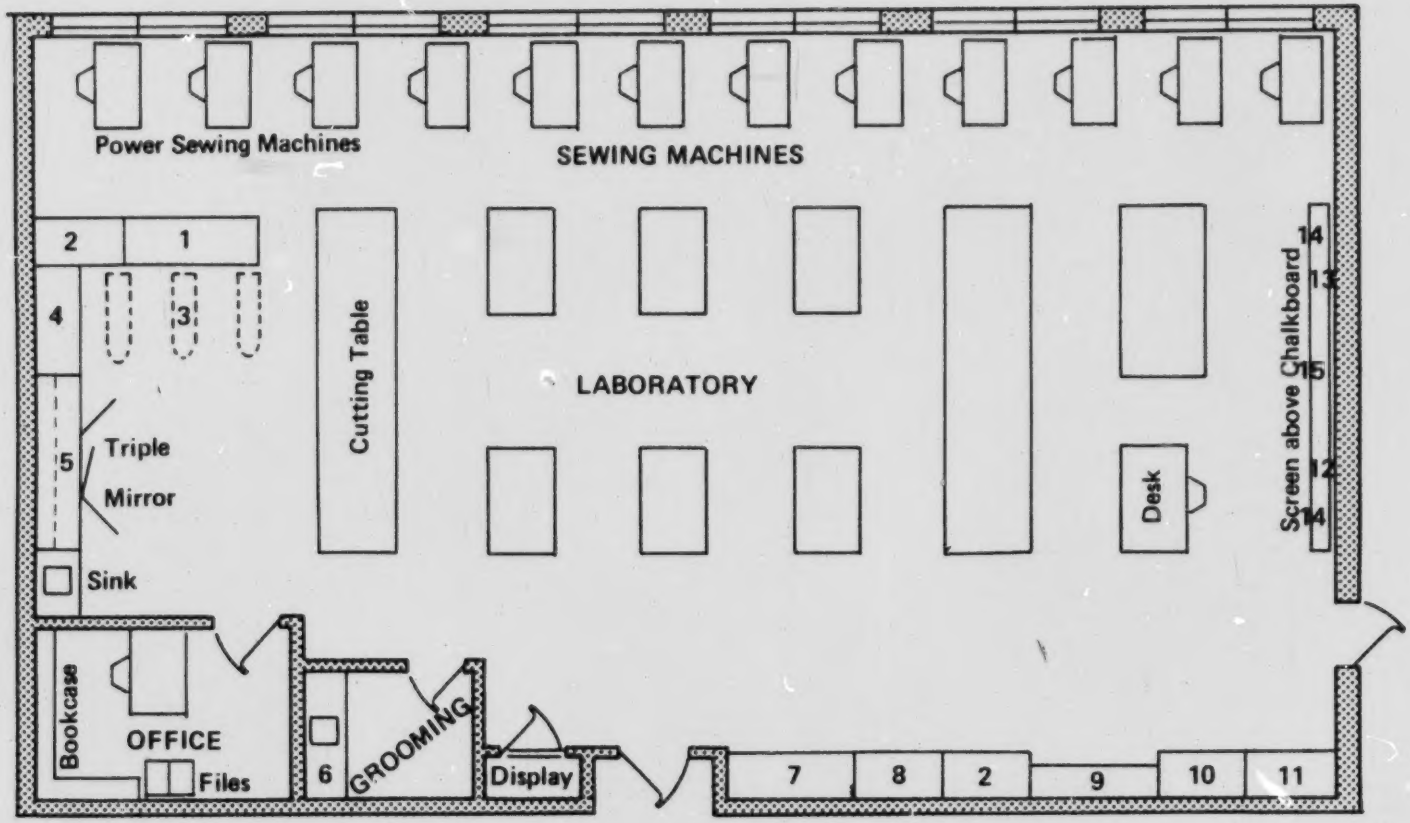
5. One chalkboard, approximately 42" wide - 96" long.

6. One or more bulletin boards, approximately 42" wide - 72" long or 48" wide - 72" long.

7. One display area, low storage cabinet with shelves underneath, approximately 47" long - 22" wide - 35" high.

LEGEND

1. Drapery material - tall cabinet
2. Adjustable shelf - tall cabinet
3. Ironing and pressing boards
4. Ironing and pressing equipment storage
5. Hanging space
6. Base cabinet
7. Tote tray cabinet
8. Pattern books and files
9. Students' wraps and books
10. Visual aids
11. Charts
12. 6' Tackboard
13. 10' Chalkboard
14. Open bookshelves
15. Sewing equipment (locking doors)



OCCUPATIONAL CLOTHING LAB

09.0202 Clothing Management, Production, and Services (for Adults)

Occupational classes for adults in clothing services are designed so that individuals completing the courses may be employable part-time or full-time in their homes, in department stores, clothing specialty shops, cleaning establishments, industrial plants and other commercial and business firms dealing with clothing. Adults will have the opportunity to apply knowledge and skills through actual construction, alteration and maintenance of garments. Both commercial and home type equipment will be used during the course. The length of the courses will vary to meet needs and goals as set up by the instructor and class enrollees.

Objectives

1. To become aware of job opportunities is the area of clothing services.
2. To gain some comprehension of trade practices and requirements in the clothing industry.
3. To understand employment policies related to commercial sewing.
4. To develop fundamental skills, knowledge and attitudes in clothing construction, maintenance and repair to qualify for entry level in clothing service occupations.
5. To develop skills in caring for and using commercial sewing equipment.
6. To become familiar with management processes in commercial sewing.
7. To develop an understanding of customer relationships, employer-employee relations and employee-employer relations in commercial sewing occupations.
8. To increase understanding of personal characteristics necessary to succeed in the business world.
9. To become aware of the prestige that may be developed through high standards of workmanship.

Class Enrollment

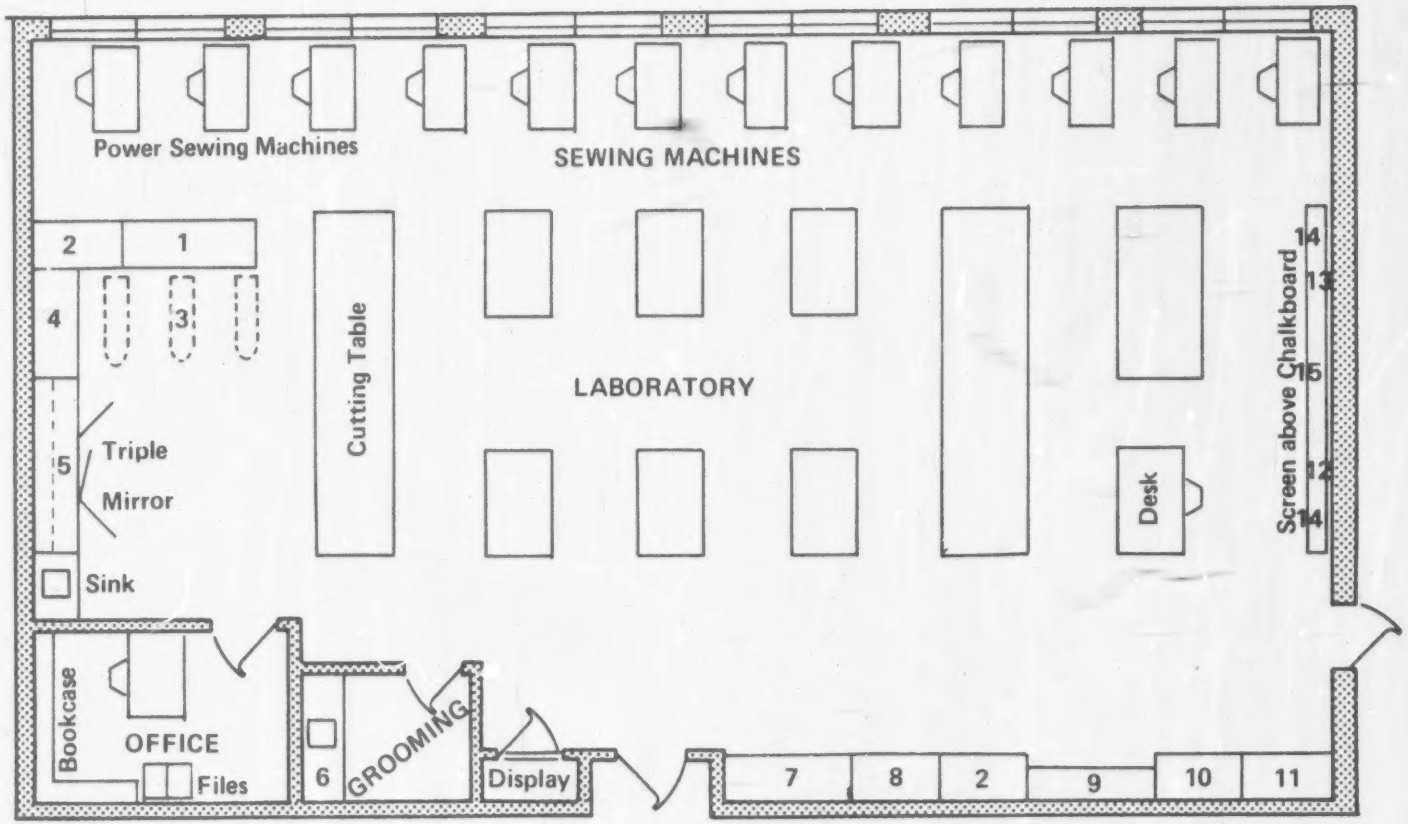
The minimum number of adults to be enrolled in an occupational clothing service class is 10 and should not exceed 20. If the department is small and the facilities limited, the enrollment should not exceed 15 to 18.

Equipment and Supplies

Adequate facilities, equipment and supplies shall be provided for training of students enrolled in the course. Lists may be obtained from the State Supervisor of Home Economics Education, State Department of Education, Jackson, Mississippi.

LEGEND

1. Drapery material - tall cabinet
2. Adjustable shelf - tall cabinet
3. Ironing and pressing
4. Ironing and pressing equipment storage
5. Hanging space
6. Base cabinet
7. Tote tray cabinet
8. Pattern books and files
9. Students' wraps and books
10. Visual aids
11. Charts
12. 6' Tackboard
13. 10' Chalkboard
14. Open bookshelves
15. Sewing equipment (locking doors)



OCCUPATIONAL CLOTHING LAB

09.0203 Food Management, Production, and Services

This area of instruction is concerned with the preparation for various kinds of employment related to institutional and commercial food services. Employment may include occupations related to planning, selecting, purchasing, preparing, and serving food and food products.

The course is structured around training individuals as party aides to assist with parties, weddings or similar occasions; kitchen supervisors; food service supervisors; or caterers of special foods or refreshments in homes.

The course is recommended for 11th and/or 12th grade students and may be taught on a specialized basis. The class may be scheduled for one period daily for the school year carrying one unit of credit.

Objectives

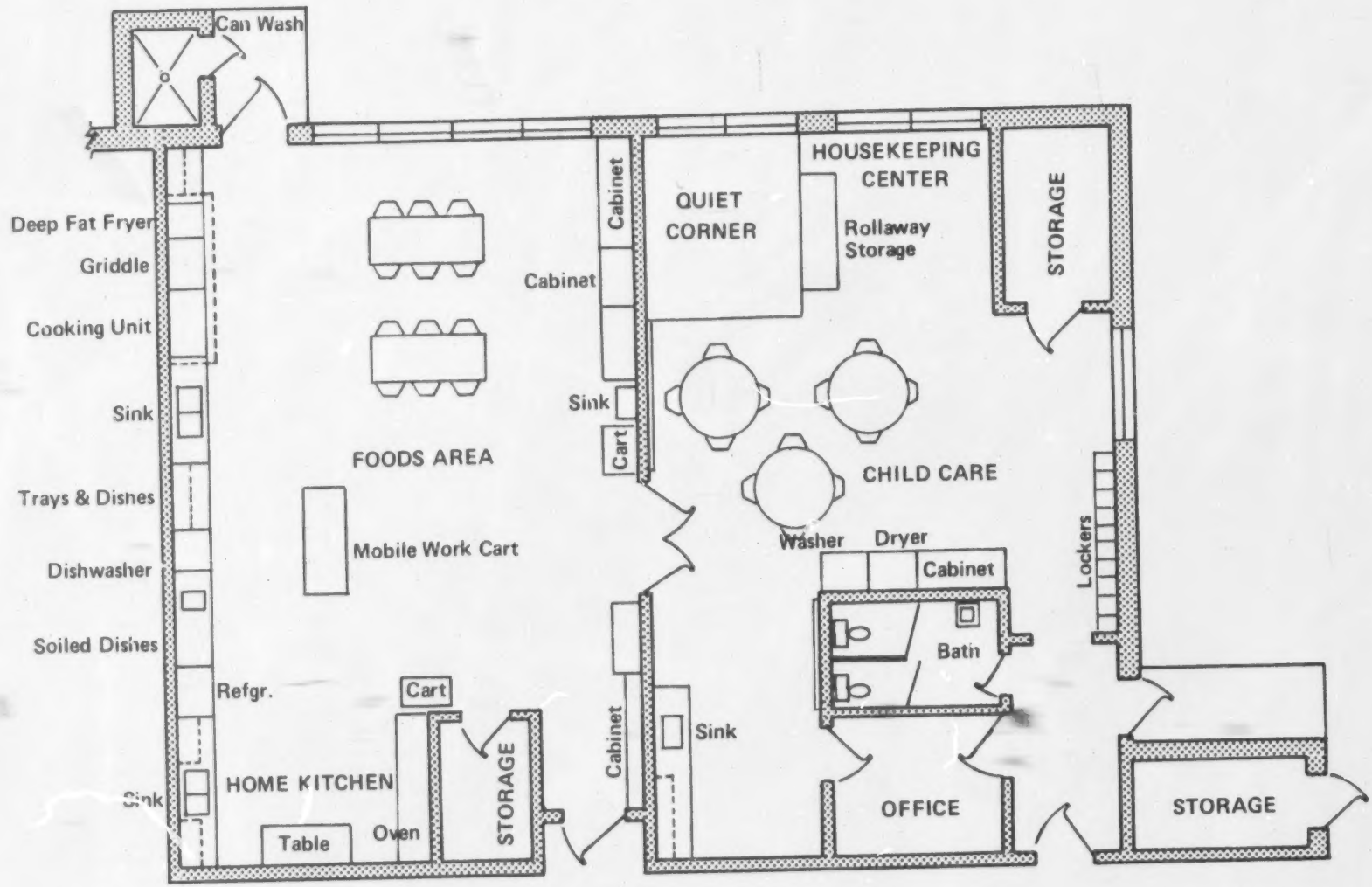
1. To develop positive attitudes which contribute to the dignity of the job.
2. To develop effective techniques in the organization of equipment and supplies.
3. To develop an understanding of the correct basic principles of quantity food cookery.
4. To understand the use and care of equipment necessary for the preparation of party foods.
5. To develop skill in planning, preparing and storing party foods for various occasions.
6. To acquire some skills in assisting with decoration and serving for various occasions.
7. To develop desirable personal characteristics necessary to succeed as a party aide.
8. To gain an understanding of ethical employment policies and practices that may be developed for jobs in this area.

Class Enrollment

Based on the nature of the course and the learning experiences and activities that will be offered for the trainees, the home economics education personnel of the State Department of Education recommend that the optimum number of students per class is 15.

Equipment and Supplies

Well equipped foods laboratories are necessary for teaching food management. Certain items of equipment and supplies will be needed in addition to those which are normally found in a foods laboratory. Each instructor teaching this type of class will need to add the necessary equipment and supplies based on the goals and experiences set for the class. A complete list of equipment and supplies is available from the State Supervisor of Home Economics Education, State Department of Education, Jackson, Mississippi.



FOODS AND CHILD CARE LAB

09.0204 Home Furnishings, Equipment, and Services

Preparation for various kinds of employment related to home furnishings and/or equipment. The course includes assisting purchasers in the selection of suitable home furnishings and/or equipment, assisting interior decorators, and custom-making of curtains, draperies, slipcovers, and similar items.

The course may be scheduled for one to three hours daily during the entire school year in high schools or vocational centers. The program carries one or two units of credit per year.

Objectives

1. To become aware of the employment opportunities in the home furnishings area.
2. To develop personal qualities needed for job success.
3. To have some understanding and ability in the use and care of commercial equipment in the home furnishings field.
4. To develop manipulative skills in measuring, straightening and cutting materials.
5. To develop some ability in making curtains, draperies, bedspreads, coverlets and room accessories using commercial sewing methods.
6. To understand employment policies and procedures related to jobs in home furnishings.

Class Enrollment

Due to the variety of learning experiences and activities the trainees will be involved in during the course, 20 is considered the maximum number to be enrolled in the program.

Equipment and Supplies

Adequate facilities, equipment and supplies shall be provided for training of students enrolled in the course. The clothing laboratory, with some additions, can be satisfactorily used for occupational training in home furnishings. Space and

equipment used for other units of instruction, if flexible and portable, can also be adapted for use in this area. The area should provide for the following facilities:

- Demonstration and work space for activities in operating and experimenting with household equipment, such as sweepers, washer-dryers and electrical appliances

- Convenient access to an area for testing electrical appliances, cleaning supplies and other items

- Carpeted decorating center or living area for demonstrating furnishings and arrangements

- Storage space for drapery materials, including racks for hanging fabrics; household items not in daily use, such as flower containers, pictures and other items; file space for swatches of rugs, curtains and household linens (See detailed suggestions under clothing area)

-Access to industrial shop for use of tools in making room accessories

Recommended number for classes is 16-20 students	Items
To be determined by number enrolled in course	Variety of samples of household fabrics and carpets. Samples of new drapery lining fabrics. Samples of various drapery and curtain rod hooks and pleater tapes. Samples of drapery hardware (extension rods, cafe, traverse, etc.) and some useful installation aids (plaster screws, plastic plugs, molly bolts).

09.0204 Home Furnishing Services (for Adults)*

Occupational classes for adults in the home furnishings area are designed so that persons completing the course may be employed part-time or full-time in their homes, and in business and commercial firms.

In laboratory and outside work experience adults will have the opportunity to design and make slipcovers, draperies, curtains, bedspreads, coverlets and room accessories using both home and commercial sewing methods and equipment.

Objectives

1. To develop an awareness of the employment opportunities in the home furnishings field.
2. To develop an understanding of the services provided in the home furnishings department in department stores, furniture stores, specialty stores, commercial firms and in individual homes.
3. To develop some ability in the use and care of home and commercial equipment.
4. To develop manipulative skills for construction of various types of curtains, draperies, shades, bedspreads, slipcovers, room accessories, and refinishing and upholstering.
5. To develop ability to accurately read and follow instructions for making unusual items to be constructed in home furnishings.
6. To understand the management processes in commercial sewing methods.
7. To develop an understanding of customer-employee relationships and employment policies in the commercial sewing field.

Class Enrollment

The minimum number of adults to be accommodated in the class is 10, and the maximum number is 15, in order that each adult may have experience in the various activities as set up in their goals for the course. The time allotted to each unit of the course can be adjusted to the local situations and the needs of the trainees.

Equipment and Supplies

Adequate facilities, equipment and supplies shall be provided for training of students enrolled in the course. Lists may be obtained from the State Supervisor of Home Economics Education, State Department of Education, Jackson, Mississippi.

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*Floor plan for 09.0204 is the same as 09.0205, see page 74.

09.0205 Institutional and Home Management and Supporting Services

The course in institutional and home management and supporting services prepares student for various kinds of employment related to institutional and home management services. These occupations include housekeeping, executive housekeeping, and hotel and motel housekeeping.

Housekeeping aide occupations range from simple repetitive tasks to those requiring more scientific knowledge. The purpose of the program for both high school students and adults is to develop personal competencies for entry-level employment in jobs requiring less than technical knowledge.

The course is designed for in-school youth and adults whose immediate objective is to acquire competencies having a valid wage value and whose services are needed in such establishments as hotels, motels, hospitals, and private homes.

The course for high school students may be scheduled for one to three periods daily during the school year and carries one to three units of credit. The course for adults is designed to meet the needs of the class members based on employment opportunities.

Objectives

The specific objectives, teaching methods, and time allotted to each type of class, high school and adult, can be adjusted to the trainees' abilities and aptitudes and to the local situation.

1. To develop an attitude of respect for the position.
2. To become aware of the responsibilities and privileges of employees and employers.
3. To be aware of safety measures for the protection of the employee and protection of the equipment and furnishings of the employer.
4. To develop skills involved in keeping hotel, motel, hospital and rooms in private homes clean, orderly and attractive.
5. To develop skill in housecleaning tasks using manual and electrical equipment and appropriate cleaning materials.
6. To acquire some skill in use of time, energy and motion.
7. To develop skills and knowledge in laundering procedures for use in private homes.

8. To develop skills in planning, preparing and serving simple nutritious meals.

9. To increase competencies in caring for elderly people.

10. To develop qualities recognized as important for successful employment in institutional and family service.

Class Enrollment

The maximum enrollment of this occupational course should be limited to 16 in order to give all enrollees an opportunity to develop competencies for employment. Both public and private facilities should be used for observation in a variety of job situations in which a trainee may be employed upon completion of the course. It is not financially sound to offer the course when the enrollment falls below 10 class members.

09.0205 Adult Program (Care of Elderly People)

The adult program on care of elderly people is closely related to and included under the institutional and home management and supporting services. This course is designed to provide learning experiences and develop the skills needed to perform the tasks required in home and community service occupations. The job responsibilities include helping an elderly person in meeting his own psychological and physical needs; helping an elderly person with personal, social, and routine business matters; and securing assistance in case of emergencies.

Objectives

1. To develop increased understanding of some of the characteristics of older people as a basis for working with them.

2. To develop ability in the personal care and grooming of an elderly person.

3. To develop some ability in administering first aid and carrying out doctor's and nurse's directions.

4. To have some understanding and ability for assisting the elderly with creative use of leisure time.

5. To develop abilities which are important for successful employment.

6. To develop some ability in making simple preparations for preparing and serving meals for elderly people.

7. To become aware of the prestige and dignity of this type employment through the development of the necessary competencies.

Class Enrollment

The course should be designed to meet the needs of the persons enrolled and employment opportunities in the community. The number of hours of instruction will also be determined by these factors. The minimum number of adults for which a class should be offered is 10, and the maximum is 20.

Equipment and Supplies

Adequate space, facilities, equipment and supplies shall be provided which will offer a variety of learning experiences for adults who are to become employable in working with the elderly. A well equipped home economics department used in basic homemaking instruction meets the minimum requirements for the adult program in care of the elderly. However, certain items of equipment and supplies in addition to the basic homemaking instruction facilities are desirable. Equipment lists and instructional supplies lists are available from the State Supervisor of Home Economics Education, Jackson, Mississippi.

The use of local hotels, motels, convalescent homes, hospitals and other institutions for observation and participation in job-related techniques, and use of equipment and materials will contribute to the effectiveness of the course. Attention can be focused on methods, procedures, and equipment used in institutional and home management services.

The following list of equipment and supplies will not be available in every community. The individual instructor should modify or supplement the recommended list as deemed necessary to meet the needs of class members and employment needs.

The following equipment may be borrowed:

1	Hospital bed and mattress
1	Bedside table
1	Wheel chair
1-4	Various type walkers
2 pairs	Crutches
1	Portable commode
1	Lift

Items to be purchased are:

Special Supplies

2-4	Kidney pans
2-4	Bed pans and urinals
2-4	Oral thermometers
2-4	Rectal thermometers
2-4	Hot water bottles
2-4	Ice bags
2-4	Heating pads
2-4	Calling bells

Toilet Equipment

2-4	Wash basins
2-4	Toothbrushes
2-4	Soap dishes
2-4	Water glasses with glass tubes
2-4	Water pitchers
2-4	Combs and brushes
2-4 sets	Manicure equipment and supplies

Linens and Bedding

2-4	Pillows
2	Bed protectors
2	Blankets
4-6	Sheets
1-2	Draw sheets

Linens and Bedding cont.

2	Mattress covers
4-6	Pillowcases
4	Bath towels
4	Hand towels
4	Wash cloths

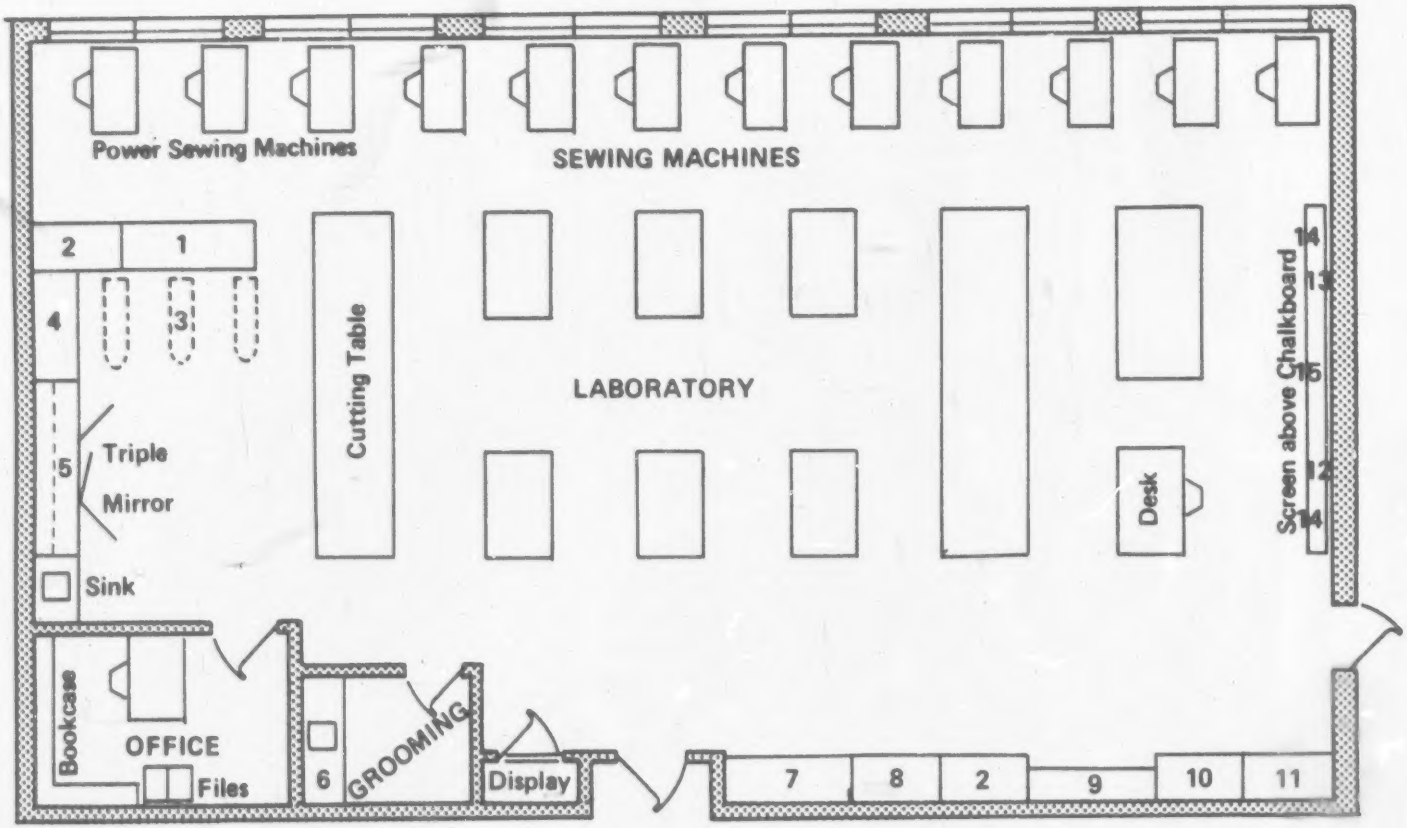
Miscellaneous Items

1	Lap board, may be made
1	Backrest, may be made
3 pkgs.	Assorted band-aids
4 pkgs.	Assorted widths gauze
4 pkgs.	Assorted widths adhesive tape
4 pkgs.	Cotton

Other items as deemed necessary by the instructor.

LEGEND

1. Drapery material - tall cabinet
2. Adjustable shelf - tall cabinet
3. Ironing and pressing
4. Ironing and pressing equipment storage
5. Hanging space
6. Base cabinet
7. Tote tray cabinet
8. Pattern books and files
9. Students' wraps and books
10. Visual aids
11. Charts
12. 6' Tackboard
13. 10' Chalkboard
14. Open bookshelves
15. Sewing equipment (locking doors)



OCCUPATIONAL CLOTHING LAB

V. BUSINESS AND OFFICE OCCUPATIONS
14.00 - 14.99

This body of subject matter, or combination of courses and practical experience, is organized into programs of instruction to provide opportunities for students to prepare for or advance in selected office occupations. In the instructional process, various aspects of subject matter frequently are drawn from other subject-matter areas. Learning experiences are designed to lead to employment and/or advancement of individuals in occupations in public or private enterprises or organizations related to the facilitation function of the office. "Facilities function" as used here refers to the expediting role played by office occupations as the connecting link between the production and distribution activities of an organization. Included are a variety of activities, such as recording and retrieval of data, supervision and coordination of office activities, internal and external communication, and the reporting of information. In this area are the items of information which identify categories of career objectives in office occupations, and around which courses and practical experiences are developed.

PURPOSE

The major purpose of the office education program is to provide quality education as a part of the total program of public education in office machines operations, office procedures, and business communications. The instructional program is designed to meet the needs of all persons in the geographic area who have entered or are preparing to enter, and those continuing education in an office occupation or an occupation requiring competency in one or more of the "facilities functions."

OBJECTIVES

The major program objectives are as follows:

1. To provide students with knowledge, skills, understandings, and attitudes essential for initial employment and continued advancement in business occupations.
2. To assist students in adjusting to occupational change.
3. To provide general business knowledge, skills, abilities and understanding needed by all students.
4. To provide guidance and counseling assistance in the choice of business careers.
5. To provide students with a basic knowledge and understanding of the free enterprise system.

6. To provide students with basic business knowledge and skills needed in managing personal business affairs.

7. To prepare students to be competent producers and consumers.

8. To assist students in acquiring respect for the dignity of work, a sense of responsibility, and a regard for good human relations.

9. To prepare students to cope with life in a rapidly changing technological age.

10. To prepare students for future study in business.

TYPES OF OFFICE OCCUPATIONS

Types of office occupations programs listed by code numbers for office occupations as used by the U. S. Office of Education are listed below. (The following was taken from **Vocational Education and Occupations.**)

14.01 Accounting and Computing Occupations

Planned learning experiences which include a combination of courses and practical experiences concerned with systematizing information about transactions and activities into accounts and quantitative records, and paying and receiving money. This group of occupations includes accountants, bookkeepers, cashiers, machine operators and bank tellers.

14.02 Business Data Processing Systems Occupations

Planned learning activities which include a combination of courses and practical experiences concerned with business data processing systems and operations. Included in this category of occupations are computer console operators, peripheral equipment operators, key punch and coding equipment operators, programmers, and systems analysts.

14.03 Filing, Office Machines, and General Office Clerical Occupations

Planned learning experiences which include a combination of courses and practical experiences concerned with the recording and retrieval of data, including classifying, sorting and filing correspondence, records, and other data. Included in the category of occupations are duplicating machine operators, file clerks, and general office clerks.

14.04 Information Communication Occupations

Learning experiences which include a combination of courses and practical experiences concerned with the distribution of information, e.g., by mail, telephone, telegraph, and in person. Included in this category of occupations are communications systems clerks, mail and postal clerks, mail-preparing and mail-handling machine operators, messengers and office boys and girls, receptionists, and information clerks.

14.05 Materials Support Occupations (Transporting, Storing, and Recording)

Planned learning activities which include a combination of courses and practical experiences concerned with (1) receiving, storing, issuing, shipping, requisitioning, and accounting for stores of material or material in use; (2) assigning locations and space to items, including verification of quality, identification, condition, and value; (3) preparing or committing stocks for shipment; (4) inventorying stock; (5) replenishing depleted items; and (6) filling orders and issuing tools, equipment, or materials to workers. This category of occupations includes planning and production clerks, quality control clerks, shipping clerks, stock and inventory clerks, traffic rate, and transportation clerks.

14.06 Personnel, Training, and Related Occupations

Planned learning experiences which include a combination of courses and practical experiences concerned with personnel administration of an organization and the facilitating functions of scheduling and conducting clerical work, management, and operations of organizations. This category of occupations includes educational assistants, training specialists, interviewers, test technicians, and personnel assistants.

14.07 Stenographic, Secretarial, and Related Occupations

Planned learning activities which include a combination of courses and practical experiences concerned with making, classifying, and filing records, including written communications. This category of occupations includes executive secretaries, secretaries, stenographers, and other stenographic, secretarial and related occupations.

14.08 Supervisory and Administrative Management Occupations

Learning activities and experiences concerned with various responsibilities, such as (1) studying policies, organizational structures, and administrative practices of organizations, such as governmental units, industrial firms, and nonprofit groups; (2) reviewing periodic budgets submitted by operations personnel; (3) preparing reports summarizing findings and recommending to line management changes in policy, organization, and administration; (4) consolidating budget estimates and preparing financial reports for comment; and (5) supervising coordinating activities, determining work procedures, and assigning duties. This category of occupations includes administrative assistants, budget management analysts, clerical and office supervisors, data-methods and systems-procedures analysts, office managers, and chief clerks.

14.09 Typing and Related Occupations

Planned learning activities which include a combination of courses and practical experiences concerned with recording data by means of typewriters and similar devices. Included in this category of occupations are typists and clerk typists.

A. Organization of Instruction for Vocational Office Training

The vocational office training (VOT) program in the secondary schools, the junior college, and the adult centers of Mississippi are designed to provide office competencies to any student or adult who needs, wants, and can profit from the training. The instruction in vocational office training consists primarily of skill development which contributes to initial employment, and insures stability or advancement in employment.

Cooperative vocational office training is offered in some schools in Mississippi. In addition to teaching job skills, this program includes instruction in such areas as employee-employer relationships and personality development. The program of instruction should be coordinated with on-the-job experience or other occupational activities which relate to the career objective of the student. The occupational activities should be of sufficient duration to develop competencies necessary for employment. The activities should be coordinated, supervised or directed by a qualified teacher who meets the requirements specified in the state plan.

B. Organization for Instruction in the Intensive Business Program

When the cooperative program is not feasible, the state authorizes vocational office training to be offered through the intensive business training (IBT) plan. Intensive business training gives the student training by putting office skills into practice in the classroom. This training may include simulated office education in which a model office laboratory is used so that the student is given training and experience as a "whole office employee" with learning activites as real office assignments.

PURPOSE

The intensive business training (IBT) program, often referred to as simulated office training, is relatively new in Mississippi. Therefore, the teacher-coordinator is limited only by his creativity and enthusiasm. This program uses the intensive block concept to provide problem-solving experiences typical of the business world and of the functions of the office.

The IBT program must meet three consecutive hours, and the student receives two credits. In special cases with prior approval from the State Supervisor of Business and Office Education, a two-hour block of time may be implemented with the student receiving one and one-half credits. The IBT program may be either a one- or two-year program; however, prior approval from the state supervisor must be obtained before a two-year curriculum is implemented.

In IBT programs where several schools are involved, the coordinator should work closely with the business education departments in each of the attendance centers involved.

OBJECTIVES

1. Equip trainee with employable office skills.
2. Create sincerity in the trainee and an interest in following the chosen occupation after graduation.
3. Develop self-direction in the performance of office duties.
4. Develop initiative and a sense of responsibility for the quality and quantity of work performed.
5. Develop an understanding of the relationship between various positions and the flow of work.

6. Develop effective human relationships and efficient work habits.

7. Develop a desire to attain higher occupational skills and standards.

8. Develop a feeling of worth, self-confidence, and personal responsibility in the student.

9. Develop an ability to secure, maintain, and advance in employment.

INTENSIVE BUSINESS COURSE OUTLINE

Office Typing

- Letters — Style and Placement
- Addressing Envelopes and Typing Small Cards
- Multiple Copies
- Rough Drafts
- Manuscripts
- Tabulations
- Legal Papers
- Forms Typing

Transcribing Machines

Filing

- Alphabetic
- Numeric
- Geographic
- Subject
- Filing Procedures
- Records Management

Office Machines

- Ten-Key Adder
- Printing Calculator
- Rotary Calculator

Duplicating and Copying

- Spirit Duplicator
- Mimeograph (Stencil Duplicator)
- Thermo-Fax Copying
- Offset Duplicator

Communications

- Composing Letters
- Telephone Training
- Receptionist Duties

Data Processing

- Simulated Keypunching

Recordkeeping

- Petty Cash
- Payrolls
- Writing Checks and Making Deposits
- Verifying Bills, Invoices, Statements
- Bank Statement Reconciliation

Personality

- Appearance
- Attitude
- Character
- Getting Along with Others

Seeking Employment

- Application Blanks
- Application Letter and Data Sheet
- Personal Interview

CLASS ENROLLMENT

The maximum number of students per class is 20; however, the recommended class enrollment is 15.

THE YOUTH ACTIVITIES PROGRAM

Opportunities are frequently provided both during and outside regular class time for pupils to develop interests, skills, and knowledge in selected aspects of office occupations as an integral part of the instructional program. The office education association and/or Future Business Leaders of America Chapter provides additional opportunities to develop leadership, other qualities, and understanding of the world of work in office occupations. Such organized activities, under appropriate supervision, are referred to as cocurricular activities. They may be designed for participation of pupils as individuals or in groups, and are an integral part of classwork.

EQUIPMENT AND SUPPLIES

The following list of supplies is considered to be a minimum for conducting a class of 15 students. For a complete list of equipment and supplies for 15 or more students per class, contact the State Supervisor, Business and Office Education, State Department of Education, Jackson, Mississippi.

MATERIALS AND SUPPLY LIST

stapling machines
staples
scotch tape dispensers
scotch tape
carbon paper
onionskin paper
erasable bond paper
bond paper
typewriter erasers
correction tape
correction fluid
fluid colored masters
purple fluid masters
thermo masters
laminating sheets
thermo copy paper
instant stencils
stencils
thermo transparencies
multilith erasers
reproducing offset pencils
non-reproducing offset pencils
electric pencil sharpener
rubber bands
paper clips
rubber cement
glue
two-face tape
foto-type letters
offset layout pads
offset cleaning sheets
cottonpads
electro-etch
fountain-etch
offset ink
cylinder cleaner
blanket wash
soap
hand cleaner
preserving baume for metal plates
offset master paper
copy paper
metal plates
negative sheets for metal plates
fixer fluid for offset
lacquer (red)
developing fluid
carbon & mixing fluid for copy machine
calendar refills
magic markers
colored bulletin board paper
thumb tacks

plastic letters for bulletin boards
overhead projector pens
fluid duplicator paper
stencil duplicator paper
protective covers for stencil duplicator
file folders for stencil
press-type letters
ink for stencil duplicator
stencil correction fluid
index cards
manila folders
fiberglass erasers
magnetic label maker
offset paper masters
staple removers
red, black & blue pens
ink eradicator
envelopes (plain & letterhead)
wire baskets
3-hole punches
bookends
shorthand records & tape
machine transcription tapes
card punch student texts
dictionaries
address labels
hand cleaner pads
business math practice sets
typing mailable letters
business behavior books
payroll procedures practice sets
typing records
chalk
acetate roll for overhead projector
adding machine paper
executive typewriter ribbons
composer ribbons
typewriter ribbons
plastic vegetable bins for each student
rulers
stylus
furniture dust spray
dusting cloths
typewriter cleaner
alphabetic file guides
tapes for transcribing machines
scissors
paper cutter
staple pullers
plastic backing sheets
file labels
key punch elements for selectric typewriters
Lester Hill Simulation Project reference books
Intensive Civil Service & Clerical Training Card Punch Aptitude Test
machine office practice sets
automated office practice sets
secretarial office practice sets
introductory business practice sets
business correspondence practice sets
clerical office practice sets
filing practice sets
typewriting office practice sets

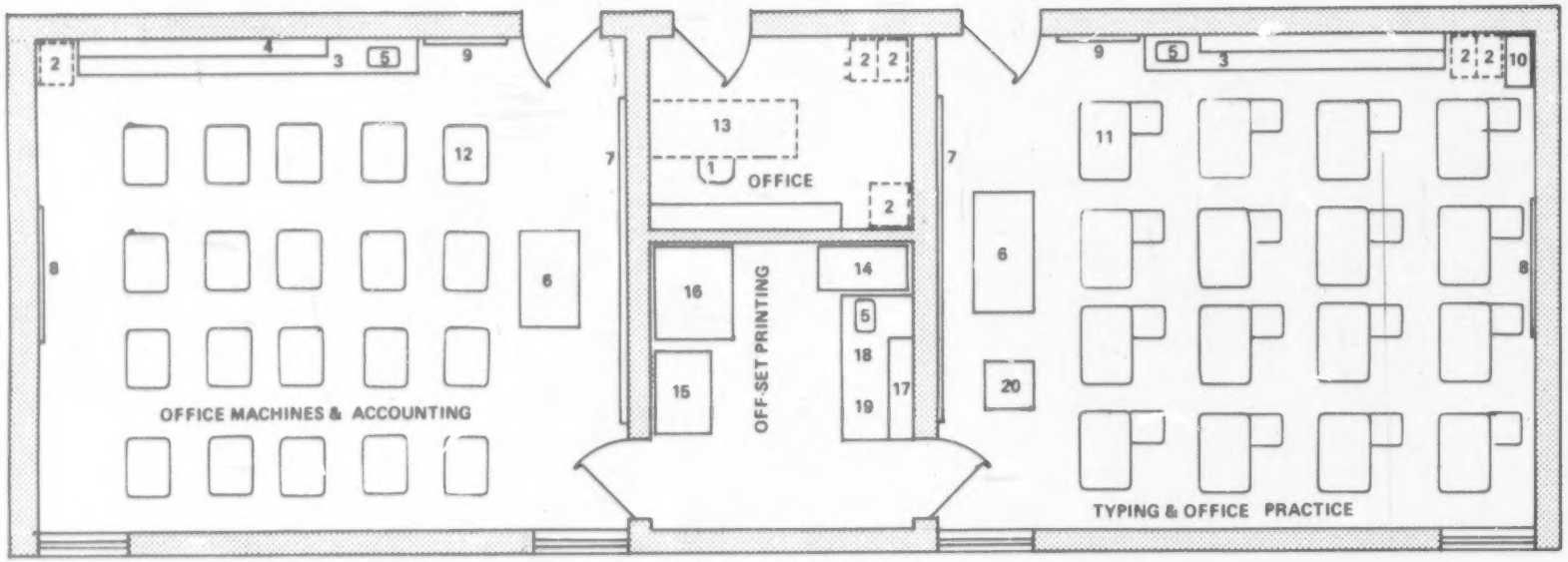
LEGEND

1. Armchair w/18" x 20" Top
2. Filing Cabinet
3. 30" ht. Counter w/Cabinets underneath
4. 12" Shelf
5. Wash Basin
6. Instructor's Desk
7. Chalkboard
8. Bulletin Board
9. Bulletin Board
10. Storage Cabinet
11. "L" Shape Typing Desk
12. 20" x 36" Tables or "L"Shape Typing Desk
13. Coordinator's Desk
14. Storage Cabinet
15. Offset Press
16. Worktable
17. Shelves for Storage
18. Mimeograph
19. Ditto
20. Demonstration Stand

Master switch for all electrical outlets should be next to light switches near entrance.

Duplicating room should be located near director's office.

Hot and cold water should be available in both classrooms.



BUSINESS EDUCATION

VI. TRADE AND INDUSTRIAL EDUCATION
17.00 - 17.99

Trade and industrial occupations is the branch of vocational education which is concerned with preparing persons for initial employment or for upgrading or retraining workers in a wide range of trade and industrial occupations. Such occupations require skilled or semiskilled workers and are concerned with layout designing, producing, processing, assembling, testing, maintaining, servicing, or repairing any product or commodity. Instruction is provided (1) in basic manipulative skills, safety judgment, and related occupational information in mathematics, drafting, and science required to perform successfully in the occupation; and (2) through a combination of shop or laboratory experiences simulating those found in industry and classroom learning. Included is instruction for apprentices in apprenticeable occupations or for journeymen already engaged in a trade or industrial occupation. Also included is training for service and certain semiprofessional occupations considered to be trade and industrial in nature.

Each program of instruction in trade and industrial education is treated as a separate area in this publication. This is necessary due to the variation of characteristics from one program to another. Each program has its own particular needs as to space, supplies, and the equipment needed. For these reasons, the floor plans, supplies lists, and related information will follow the program description of each area of instruction.

PURPOSE

In trade and industrial education, the purpose of the program is to provide students with an opportunity to acquire marketable skills and knowledge in a given skill trade area for which they have appropriate aptitude, vocational interest, physical, and personal characteristics. This is accomplished through organized in-school shop experience so that the student who satisfactorily completes a program will be ready to go to work in his chosen trade area or continue his training in the same or related area on a more advanced basis at the junior college level. The curriculum is articulated between the high school and junior college levels so that there is a minimum of duplication. At the high school level, the regular program is a two-year program designed primarily for juniors and seniors. The trade being taught is selected on the basis of manpower needs and job opportunities, as well as student interests. Shop facilities and equipment are of modern design and approximate that being used by industry. The facilities in trade and industrial education are designed and equipped to handle a maximum of 20 students per section and 2 sections per day.

OBJECTIVES

1. To provide an opportunity for each student to acquire entry-level skills and knowledge prior to employment in his chosen occupation.

2. To provide an opportunity for each student to receive advanced or specialized training in his chosen occupation.

3. To provide an opportunity for each student to acquire employability skills as an intricate part of manipulative skill development.

4. To provide an opportunity for each student to acquire leadership and citizenship skills and to develop a respect for the dignity of work through vocational youth club activities.

TYPES OF TRADE AND INDUSTRIAL EDUCATION PROGRAMS

17.0301 Automobile-Body Repair

Specialized learning experiences concerned with all phases of the repair of damaged bodies and fenders, including metal straightening by hammering; smoothing areas by filing, grinding, or sanding; concealment of imperfections; painting; and replacement of body components, including trim.[1]

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[1]Program descriptions in trade and industry were taken from **Vocational Education and Occupations.**

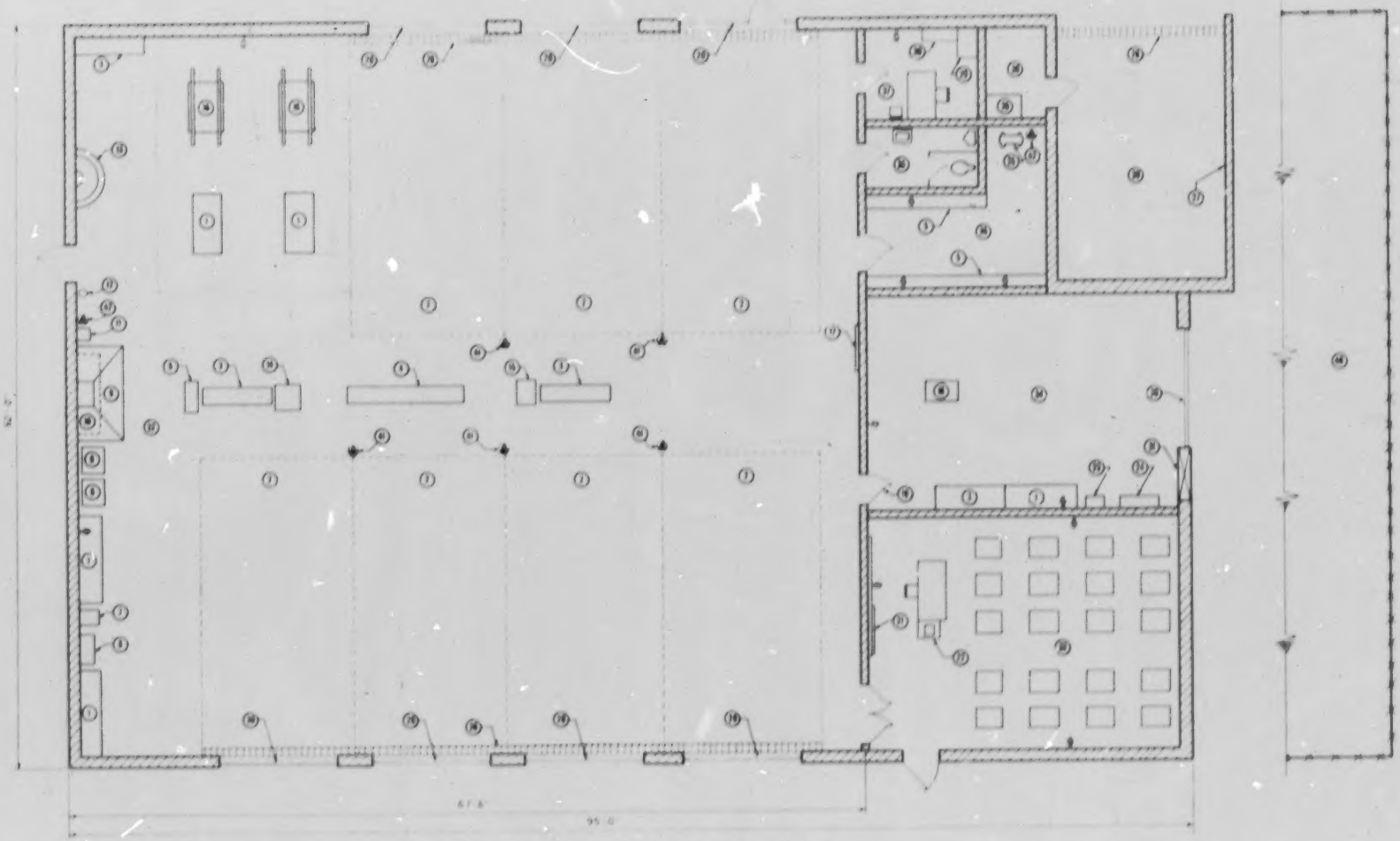
LEGEND

Automobile-Body Repair

1. Workbenches
2. Automobile bays
3. Tool-storage cabinets
4. Body-jack rack
5. Shelving
6. Grinder — min 1-hp
7. Arbor press
8. Oxyacetylene welding outfits
9. Exhaust hood
10. Welding bench
11. Arc welder — min 100-amp input
12. Fire extinguisher
13. Half-round sink
14. Floor jacks
15. Twin-saddle jack
16. Holding unit
17. Tack board
18. Air filter — through ceiling
19. Dust-proof door
20. Overhead door — 10' x 10'
21. Pull-down screen
22. Overhead projector
23. Apron taper
24. Drying-light panel
25. Air compressor — min 7½-hp
26. Steam cleaner — min 1/3-hp
27. Screen tile
28. Floor drain
29. File cabinet
30. Bookshelf
31. Filtered-exhaust fan
32. Open-shop — 62' x 67' 6"
33. Classroom — 27' 3" x 20' 9"
34. Paint room* — 27' 3" x 18' 6"
35. Toolroom — 16' 6" x 14'
36. Toilet — 10' x 5' 9"
37. Office — 10' x 8' 9"
38. Storage room — 8' 9" x 6' 3"
39. Wash rack — 23' x 15'
40. Fenced storage — 62' x 20' or storage for 6 automobiles
41. 4-Outlet box and air outlet, suspended 78" from floor; 115-v single-phase

(▲) 230-volt, 3-phase

*Purchase of commercial paint booth acceptable



AUTOMOBILE- BODY REPAIR

SUPPLY LIST

Automobile-Body Repair Supplies

Abrasives

Carbide paper, silicon: waterproof; 3 2/3 in. x 9 in.; 40- and 80-grit
Carbide paper, silicon: 2 3/4 in. x 17 1/2 in.; 40- and 80-grit
Carbide paper, silicon: 9 in. x 11 in., 240-, 320-, 400-, and 500-grit
Carbide paper, silicon: 4 1/2 in. x 11 in., 400-grit
Rubbing compounds
Sanding — discs, body: 7 in.; 16-, 24-, and 36-grit
Sanding — discs, body: 9 in.; 16-, 24-, and 36-grit

Adhesives and Sealers

Caulk, body
Caulk, strip
Drip-check sealer
Feathering-disc adhesive
Super-weatherstrip adhesive (yellow)
Tape, masking: 3/4 in.
Tape, masking: 4 in.
Tape, masking: 12 in.
Trim adhesive
Weather-strip adhesive (black)
Windshield sealer

Cleaning

Brooms
Hand cleaner
Rags
Steam-cleaning compound
Steel wool

Fasteners

Brackers
Carriage-head bolts
Hinges
Machine screws
Rivets: assorted sizes
Sheet metal screws
Studs
Trim fasteners and retainers
Washers, assorted (lock washers, etc.)

Paint

Acrylic lacquer
Acrylic-lacquer retarder
Acrylic-lacquer thinner: low-grade
Acrylic-lacquer thinner: high-grade
Body deadener — undercoating
Enamel
Enamel reducer
Masks, filter, face

Soldering and Filler

Acid swabs
Body solder: 20/80
Muriatic acid
Plastic body-filler spreader
Plastic filler
Soldering flux

Welding and Brazing

Acetylene
Brazing-rods: brass
Brazing-rods: bronze
Electrodes, arc (manual-metal); mild-steel, flux-coated
Flints, renewal
Flux, brazing:paste-or powder-type
Lens, cover and replacement
Oxygen
Plates, filter: 2 in. x 4 1/2 in., for welding helmet
Rods, oxyacetylene welding

Such supplies as door-handle and door-locking mechanisms, weather stripping, trim molding, window glass, and headlamps will need to be in stock. Other supplies will be ordered as the need arises.

17.0302 Automotive Mechanics

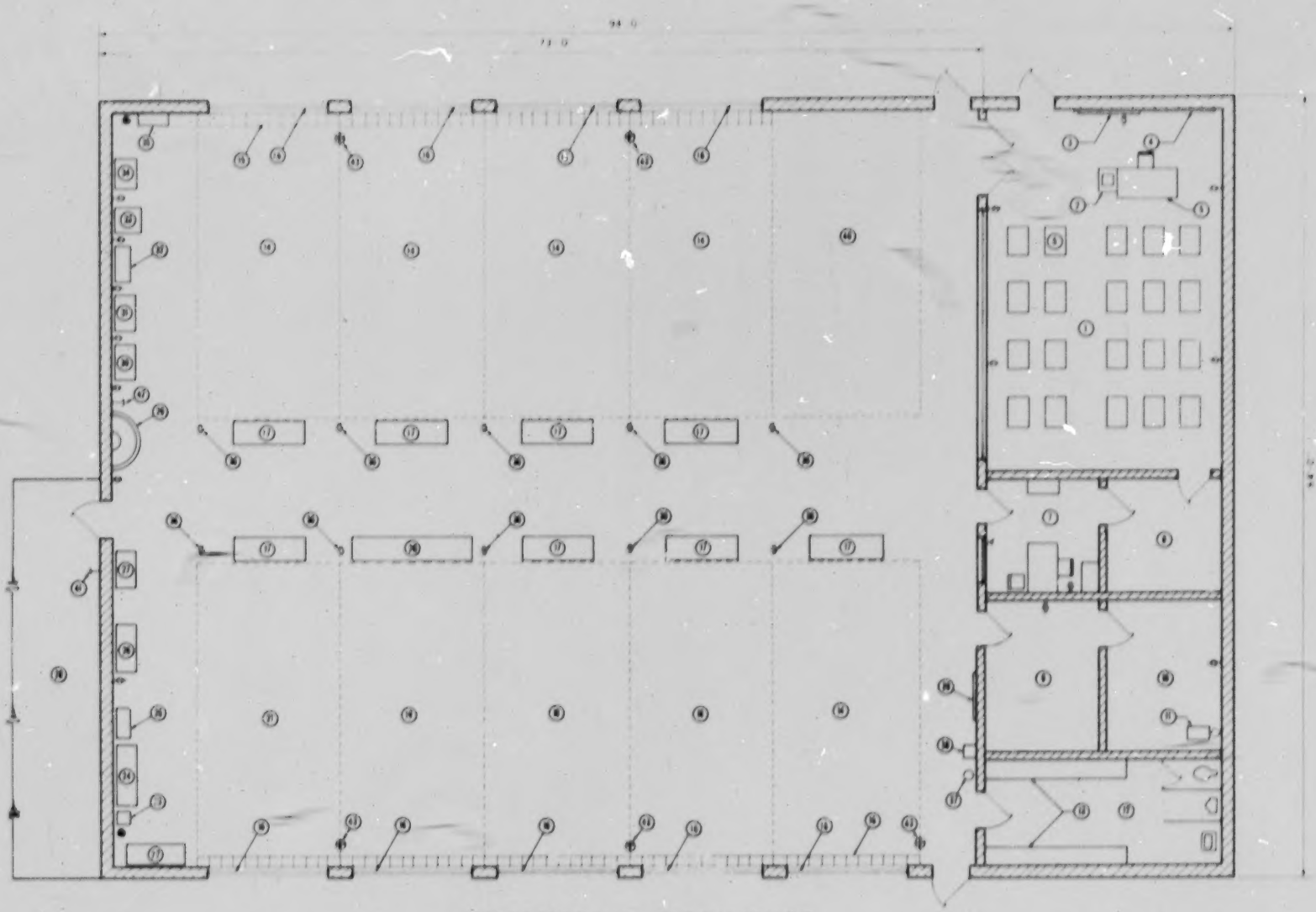
Classroom and shop learning experiences concerned with the components of the vehicle, including engine, power transmission, steering, brakes, and electrical systems. Included is training in the use of diagnostic and testing equipment and tools used in the repair process.

LEGEND

Automotive Mechanics

1. Classroom — 20' x 30'
2. Overhead projector
3. Pull-down screen
4. Chalkboard
5. Teacher's desk
6. Student desks
7. Office — 10' x 10'
8. Storage — 10' x 10'
9. Toolroom — 10' x 13'; 3' 6" Dutch door
10. Storage — 10' x 13'; 3' 6" Dutch door
11. Air compressor — min 5-hp
12. Toilet — 9' x 10'
13. Lockers
14. Automobile bays
15. Floor drain
16. Overhead door — 10' x 10'
17. Workbench
18. Hydraulic lift
19. Alignment area
20. Wheel-alignment machine
21. Brake area
22. Brake lathe — min ½-hp
23. Arc welder — min 100-amp input
24. Welding table
25. Oxyacetylene welder
26. Parts washer
27. Steam cleaner
28. Cleaning area, with trap-type drain
29. Half-round sink
30. Distributor machine
31. Engine tune-up machine
32. Engine analyzer
33. Arbor press
34. Honing machine (optional)
35. Grinder — min ½-hp
36. 4-Outlet box and air outlet, suspended 78" from floor
37. Fire extinguisher
38. Water cooler
39. Tack board
40. Engines area
41. Frost free hose bib
42. Regular hose bib
- ⏚ 230-volt, 3-phase

43. Exhaust system: dual-inlet, retractable; overhead or in-the-floor system acceptable



AUTOMOTIVE MECHANICS

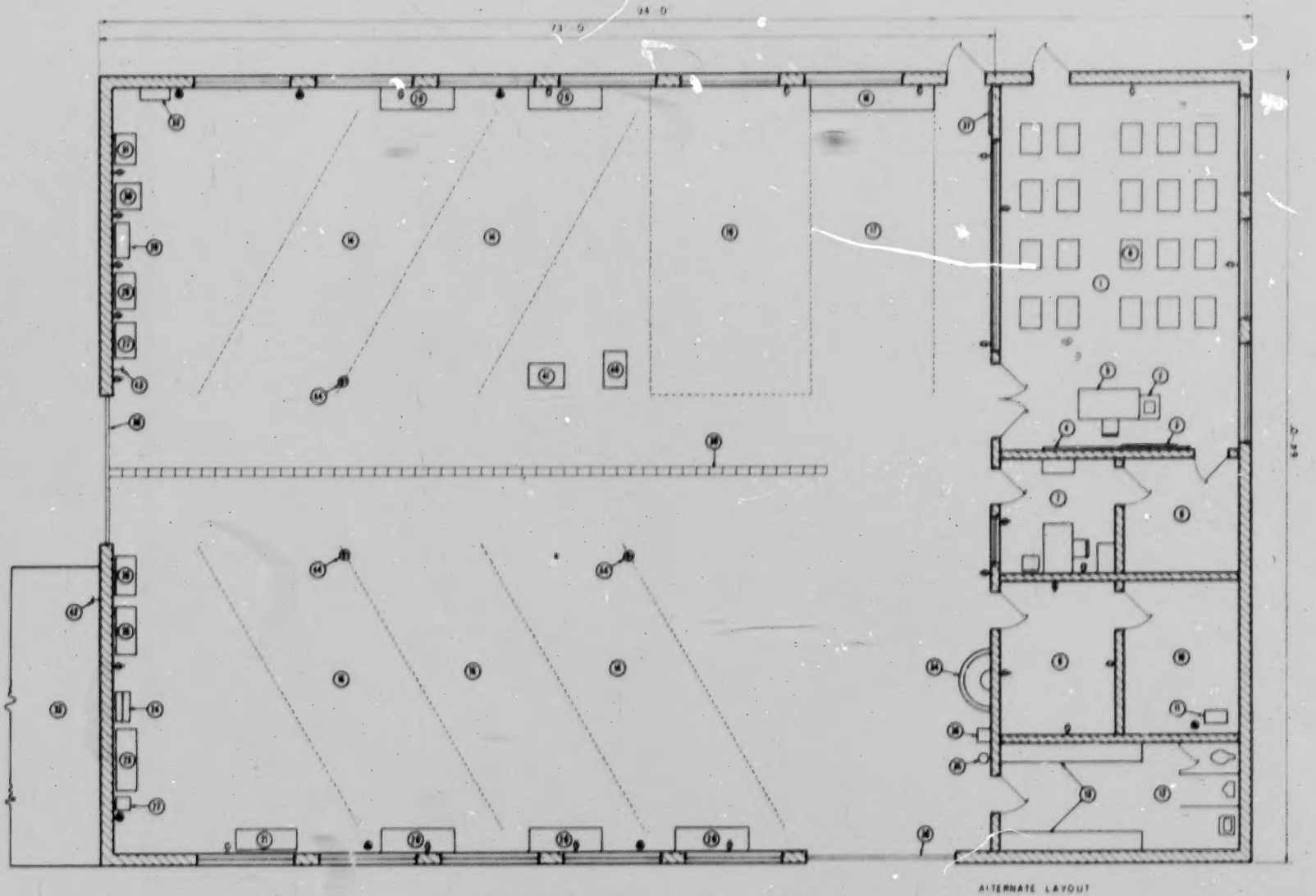
LEGEND (ALTERNATE)

Alternate Automotive Mechanics

1. Classroom — 20' x 30'
2. Overhead projector
3. Pull-down screen
4. Chalkboard
5. Teacher's desk
6. Student desks
7. Office — 10' x 10'
8. Storage — 10' x 10'
9. Toolroom — 10' x 13': 3' 6" Dutch door
10. Storage — 10' x 10'; 3' 6" Dutch door
11. Air compressor — min 5-hp
12. Toilet — 10' x 9'
13. Lockers
14. Automobile bays
15. Hydraulic lift
16. Brake area
17. Alignment area: rack- or pit-type with handrail
18. Wheel-alignment machine
19. Engines area
20. Workbench
21. Brake lathe — min ½-hp
22. Arc welder — min 100-amp input
23. Welding table
24. Oxyacetylene welder
25. Parts washer
26. Steam cleaner
27. Distributor machine
28. Engine tune-up machine
29. Engine analyzer
30. Arbor press
31. Honing machine (optional)
32. Grinder — min 1-hp
33. Cleaning area, with trap-type drain
34. Half-round sink
35. Fire extinguisher
36. Water cooler
37. Tack board
38. Overhead door — 10' x 10'
39. Floor drain
40. Wheel-balancing machine
41. Twin-saddle jack
42. Frost free hose bib
43. Regular hose bib

△ 230-volt, 3-phase

44. Exhaust system: dual-inlet, retractable; overhead or in the floor system acceptable



ALTERNATE LAYOUT

AUTOMOTIVE MECHANICS

SUPPLY LIST

Automotive Mechanics Supplies

Abrasives

Commutator paper
Crocus cloth
Emery cloth
Sandpaper: aluminum oxide; 400-, 240-, and 100-grit
Valve lapping and grinding compound

Adhesives

Electrical tape
Gasket cement: hard-dry, soft-dry
Masking tape
Plastic cement
Rubber cement
Upholstery cement
Weatherstrip cement

Antifreeze

Batteries

Flashlight
Automotive: 6-v; 12-v

Cleaning

Alcohol
Baking soda
Car polish and wax
Floor-cleaning compound
Hand cleaner
Radiator-cleaner compound
Rags
Soaps: car-wash, steam-cleaning
Solvents; cleaning; engine, carburetor, (all should be nonflammable whenever possible)
Towels, shop

Cutting

Blades, hacksaw; 18 teeth
Blades, hacksaw: 24 teeth
Cutting oil

Electrical

Bulbs, shop: incandescent and/or fluorescent
Bulbs: 6-v, 12-v, 24-v,; assorted sizes
Cables, battery
Condensers
Diodes
Fuses: assorted
Headlamps: 4001
Headlamps: 4002
Headlamps: 6006
Headlamps: 6012
Motor brushes
Points
Spark plugs
Spark-plug wires, replacement
Starter Brushes
Terminals: assorted
Wire: 8-, 10-, 12-, 14-, 16-, 18-, 20-gage in solid colors and braids

Fasteners

Bolts and nuts: NF, NC; steel, brass
Cotter keys: 1/8 in. x 2 in.; 9/32 in. x 1/4 in.
Screws, machine: assorted round- and flat-heads; washers, flat, lock, star

Fittings and Connections

Copper tubing: 3/16 in., 1/4 in., 3/8 in.
Copper-tubings fittings: T's, L's, unions and ferrules
Steel tubing: 3/16 in., 1/4 in., 3/8 in.
Steel-tubing fittings: T's, L's, unions and ferrules

Fluids

Brake
Hydraulic jack
Power steering

Gaskets

Automatic-transmission gasket sets
Carburetor: for 1-barrel, 2-barrel, and 4-barrel
Cylinder head
Manifold
Oil pan
Timing gear
Valve cover
Water pump

Hose

Hose clamps: assorted sizes and types
Radiator
Windshield wiper

Lubricants

Automatic transmission
Chassis grease
Differential grease
Door striker-plate grease
Heat-control valve grease
Hypoid gear
Lithium grease
Lubriplate
Oil: 10-, 20-, 30-weight; detergent and nondetergent
Penetrating or rust-solvent oil
Powdered graphite
Rubber lubricant
Silicone, aerosal spray
Transmission (standard) grease
Upper-cylinder lubricant
Wheel-bearing grease

Manuals, Shop

Paint

Brushes: assorted, ¾ in. — 3 in. width
Paint, engine: heat-resistant; red, blue, and black
Paint thinner
Shellac

Radiator Stop-Leak

Soldering

Acid swab
Flux, noncorrosive paste-type
Muriatic Acid
Sal ammoniac
Solder, acid-core
Solder, rosin-core

Welding and Brazing

Acetylene
Brazing rods: brass
Brazing rods: bronze
Electrodes, arc (manual-metal); mild-steel, flux-coated
Flints, renewal
Flux, brazing: paste- or powder-type
Lens, cover and replacement
Oxygen
Plates, filter: 2 in. x 4 ½ in., for welding helmet
Rods, oxyacetylene welding
Such supplies as door-handle and door-locking mechanisms, weather stripping, trim molding, window glass, and headlamps will need to be in stock. Other supplies will be ordered as the need arises.

PARTS: It is essential that the school have in stock such supplies as the following: brake-shoe assembles, wheel-cylinder kits, carburetor kits, clutch-assembly parts, transmission-assembly parts, front-suspension parts, rings, and pistons. However, many parts supplies used in shop services repair work as a teaching method will be paid for by those receiving service on their automobiles.

17.1004 Masonry

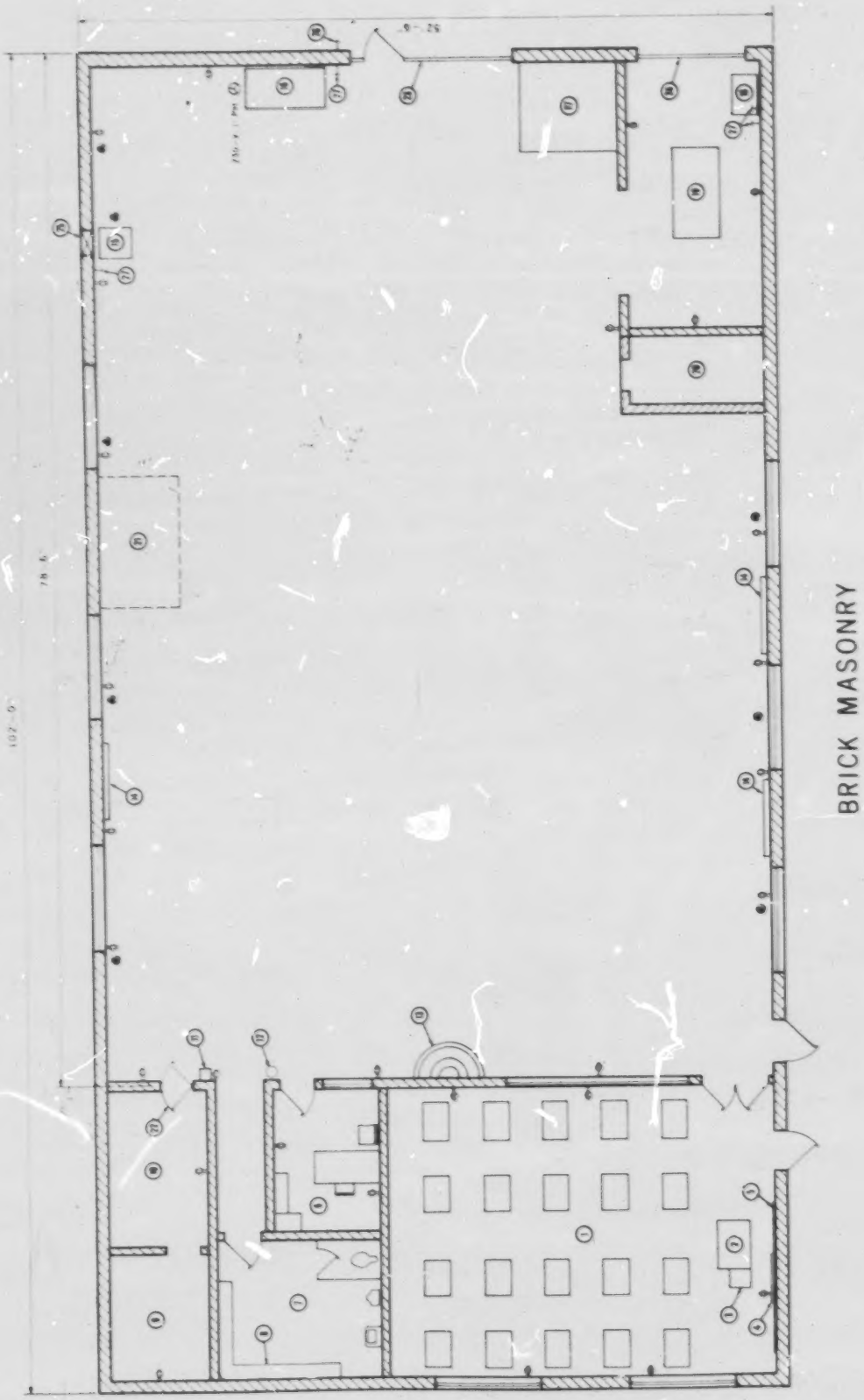
Specialized classroom and shop experiences concerned with the cutting, chipping, and fixing in position of concrete blocks, brick, and glass blocks using bonding materials and hand tools. Included is training in reading architectural plans, planning, and estimating.

LEGEND

Brick Masonry

1. Classroom — 24' x 30' 6"
2. Teacher's desk
3. Overhead projector
4. Pull-down screen
5. Chalkboard
6. Office — 8' 6" x 11' 6"
7. Toilet — 12' x 13'
8. Lockers
9. Storage — 9' x 11'
10. Toolroom — 9' x 12' 6"
11. Water cooler
12. Fire extinguisher
13. Half-round sink
14. Tool panels
15. Brick saw — min 2-hp
16. Mortar mixer — min 5-hp
17. Sand storage
18. Sink
19. Mortar box
20. Lime storage — floor raised 6", 4' wall
21. Brick storage
22. Dutch door
23. Overhead door 10' x 12'
24. Overhead door 8' x 8'
25. Exhaust fan with fully enclosed motor
26. Frost free hose bib
27. Regular hose bib

230-volt, 3-phase


BRICK MASONRY

SUPPLY LIST

Brick Masonry Supplies

Brick

Common brick
Face brick

Concrete

Concrete blocks: 8 in. x 8 in. x 16 in.
Concrete blocks: 8 in. x 8 in. x 8 in.
Concrete blocks: 4 in. x 8 in. x 16 in.

Cutting

Blades, carborundurn: 12 in. (brick-cutting)
Blades, diamond: 14 in. (brick-cutting)

Lumber

Mortar boards: 1 in. x 6 in. x 8 in., No. 2
Mortar boxes: 2 in. x 4 in. x 12 in.: 1 in. x 4 in. x 8 in.; 1 in. x 4 in. x 12 in.
Scaffolding: 2 in. x 6 in.; 1 in. x 6 in.; 2 in. x 8 in.; 2 in. x 10 in.

Mixing

Cement, Portland
Cloth, hardware: 36 in. wide, ¼ in. mesh
Gravel
Lime, hydrated
Sand

Reinforcing Steel

Angle iron: 3/8 in. x 3 1/2 in. x 4 in.
Bolts: 3/4 in. x 12 in.
Steel bars: 1/2 in., 3/4 in., and 1 in.

Wall Ties

Cavity-joint reinforcement
Corrugated veneer: 7/8 in., 22-gage
Dovetail anchors: 7/8 in., 16-gage
Rectangular tie
Z tie

Miscellaneous

Flashing, metal: for wall bases, window sills and openings
Flue-lining material
Line, nylon
Nails, common: 8d, 16d
Terra-cotta tile
Waterproofing compound

17.10 Building Trades

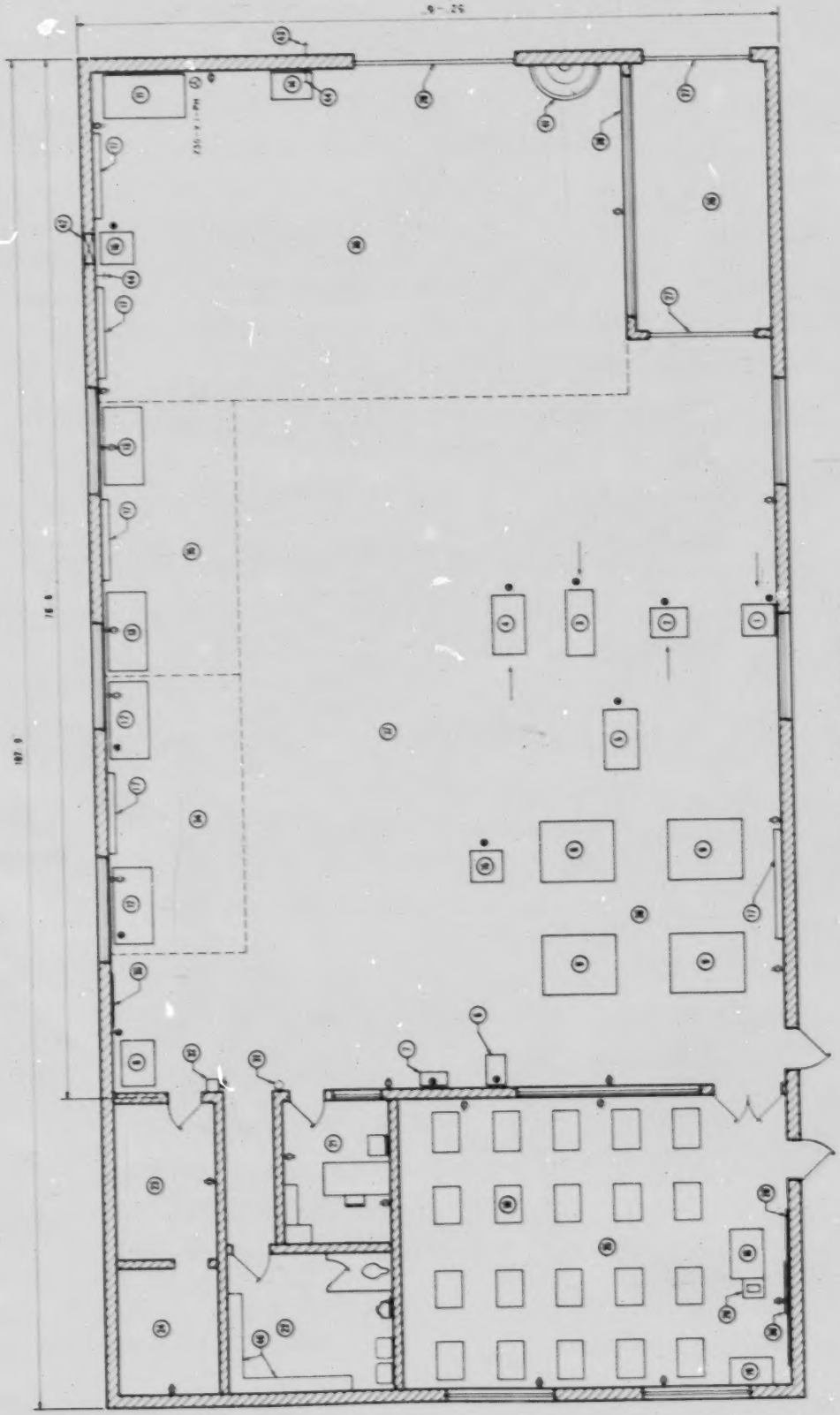
Classroom and shop experiences concerned with the erection, installation, maintenance, and repair of buildings, using assorted materials, such as wood, stone, brick, glass, concrete, or composition substances. Instruction is provided in a variety of activities, such as cost estimating; cutting, fitting, fastening, and finishing various materials; the uses of a variety of hand and power tools; and blueprint reading and following technical specifications. Knowledge concerning the physical properties of materials also is emphasized.

LEGEND

Building Trades

1. Radial-arm saw — min 3-hp
2. Planer — min 5-hp
3. Jointer — min 1-hp
4. Table saw — min 3-hp
5. Band saw — min 1½-hp
6. Drill press — min ¾-hp
7. Grinder — min ¾-hp
8. Air compressor — min 2-hp
9. Workbench
10. Drawing tables
11. Mortar mixer — min 5-hp
12. Electrical workbench
13. Plumbing workbench
14. Service sink
15. Shaper — min 2-hp
16. Brick saw — min 2-hp
17. Tool panel
18. Teacher's desk
19. Drawing cabinet
20. Chalkboard
21. Office — 8' 6" x 11' 6"
22. Dressing room & toilet — 12' x 13'
23. Toolroom — 12' 6" x 8' 9"
24. Supply room — 11' x 8' 9"
25. Classroom — 30' 6" x 23' 6"
26. Lumber rack — 10' x 20'
27. Overhead door — 8' x 10'
28. Overhead door — 12' x 10'
29. Overhead projector
30. Pull-down screen
31. Fire extinguisher
32. Water cooler
33. Tack board
34. Electrical area — 10' x 21'
35. Plumbing area — 10' x 21'
36. Brick area — 25' x 38' 6"
37. Carpentry area
38. Cabinet area
39. 3' Wall and expanded metal
40. Lockers
41. Sink
42. Exhaust fan with fully enclosed motor
43. Frost free hose bib
44. Regular hose bib

△ 230-volt, 3-phase



BUILDING TRADES

SUPPLY LIST

Building Trades Supplies

Brick Masonry Supplies

Brick

Common brick
Face brick

Concrete

Concrete blocks: 8 in. x 8 in. x 16 in.
Concrete blocks: 8 in. x 8 in. x 8 in.
Concrete blocks: 4 in. x 8 in. x 16 in.

Cutting

Blades, carborundum: 12 in. (brick-cutting)
Blades, diamond: 12 in. (brick-cutting)

Lumber

Mortar boards: 1 in. x 6 in. x 8 in., No. 2
Mortar boxes: 2 in. x 4 in. x 12 in.; 1 in. x 4 in. x 8 in.; 1 in. x 4 in. x 12 in.
Scaffolding: 2 in. x 6 in.; 1 in. x 6 in.; 2 in. x 8 in.; 2 in. x 10 in.; 2 in. x 6 in.

Mixing

Cement, Portland
Cloth, hardware: 36 in. wide, 1/4 in. mesh
Gravel
Lime, hydrated
Sand

Reinforcing Steel

Angle iron: 3/8 in x 3 1/2 in. x 4 in.
Bolts: 3/4 in. x 12 in.
Steel bars: 1/2 in., 3/4 in., and 1 in.

Wall Ties

Cavity-joint reinforcement
Corrugated veneer: 7/8 in., 22-gage
Dovetail anchors: 7/8 in., 16-gage
Rectangular tie
Z tie

Miscellaneous

Flashing metal: for wall bases, window sills and openings
Flue-lining material
Line, nylon
Nails common: 8d, 16d
Terra-cotta tile
Waterproofing compound

Carpentry Supplies

Abrasives

Sanding belts
Sanding discs
Sandpaper: fine, medium and coarse grit sheets

Adhesives

Casein glue
Mastic, waterproof
Synthetic-resin glue

Hardware

Anchors, ram set
Bolts, carriage: assorted sizes
Bolts, flat head: assorted sizes
Brads, wire: 1/4 in., 1/2 in., 1 in., and 1 1/4 in.
Butt hinges: 3 1/2 in.
Cabinet hinges: 3/8 in. offset
Cabinet pulls
Catches, friction
Latches, night
Locks, cylinder
Nails, casing: 8d
Nails, common: 8d, 12d, and 16d
Nails, finish: 6d and 8d
Nails, flooring: Mechanical hammer-type
Nails, galvanized, roofing: 3/4 in. and 1 in.
Nails, plasterboard: 1 3/4 in.
Screws, wood, No. 8: F.H., 1 in.
Screws, wood, No. 8: F.H., 1 1/4 in.
Screws, wood, No. 6: F.H., 1 in.
Screws, wood, No. 6: F.H., 1 1/4 in.
Screws, wood, No. 8: R.H., 1 1/4 in.
Screws, wood, No. 6: R.H., 1 1/4 in.
Staples, heavy-duty: 3/8 in., 3/4 in., and 1 1/4 in.

Paint

Alcohol, denatured
Brushes, paint: 2 in. and 3 in.
Oil stain, light oak
Oil stain, walnut
Paint thinner
Shellac, clear
Varnish, clear

Wood

Casing molding: 4 in. and 6 in.
Flooring, center match: 1 in. x 6 in.
Flooring, hardwood: 1 in . x 4 in.
Plywood: 3/4 in. A-D, 4 ft. x 8 ft.
Quarter round
Shoe mold
Siding, bevel: 1 in. x 6 in. x 8 in.
Storm sheathing: 1 in. x 6 in.
Yellow pine, No. 1: 1 in. x 6 in. x 10 ft.
Yellow pine, No. 2: 2 in. x 4 in. x 10 ft.
Yellow pine, No. 2: 2 in. x 4 in. x 12 ft.
Yellow pine, No. 2: 2 in. x 4 in. x 16 ft.
Yellow pine, No. 2: 2 in. x 6 in. x 12 ft.
Yellow pine, No. 2: 2 in. x 8 in. x 12 ft.
Yellow pine, No. 2: 2 in. x 12 in. x 16 ft.
Yellow pine, No. 2: 1 in. x 4 in. x 12 ft.
Yellow pine, No. 2: 1 in. x 6 in. x 12 ft.
Yellow pine, No. 2: 1 in. x 8 in. x 12 ft.
Window sashes: 32 in. x 54 in.

Roofing

Roofing-felt: 15-lb and 30-lb
Shingles, asphalt

Electrical Supplies

Devices, Lighting

Ballast, fluorescent: 40-watt and 60-watt, 115-v
Bulbs, incandescent lamp: 100-watt and 150-watt, 115-v
Lamps, fluorescent, preheat and rapid start: 40-watt, 48 in. x 1 1/2 in. bipin

Electrical Control

Fuses, plug: 5-, 15-, 20-, 30-amp
Plugs, male: automatic snap-in
Starters, fluorescent, reset and standard: 40-watt, 115-v
Switches, toggle: single-pole; 3-way; 4-way

Fixtures

Bases, lamp: miniature screw-type
Bases, lamp: medium base
Boxes, conduit: 1/2 in. size, single and duplex
Boxes, outlet: galvanized, octagonal, 1/2 in. K.O.
Boxes, receptacle: galvanized, single and duplex
Boxes, switch: galvanized, rectangular, 2 1/2 in. x 4 in., 1/2 in. K.O.

Fittings and Connectors

Conduit, flexible, metallic: 1/2 in., 3/4 in., and 1 in.
Conduit, rigid: 1/2 in. and 3/4 in. galvanized
Conduit, flexible, metallic: connectors; 1/2 in., 3/4 in., and 1 in.
Connectors, BX cable: 14-2 and 10-2 wire; 1/2 in. K.O.
E.M.T.: 3/4 in. and 1 in.
E.M.T. connectors: 3/4 in. and 1 in.
E.M.T. couplings: 3/4 in. and 1 in.
Steel straps, E.M.T.: 1/2 in., 3/4 in., 1 in. — 1-hole type

Soldering

Acid swab
Flux, noncorrosive paste-type
Muriatic acid
Sal ammoniac
Solder, acid-core: 40/60
Solder, rosin-core: 40/60

Wire

Element wire: No.18; 660-watt, 110-volts
Entrance cable: No.6-3; type S.E.
Fuse wire: 5-amp
Iron cord, asbestos: No.18-2, H.P.D.
Lamp cord, rubber: No. 16-2 SJ, III
Magnet wire, B & S 16-gage
Magnet wire, B & S 36-gage
Staples, insulated: No. 2 communication wire
Staples, romex: size 10-3
Wire, thermoplastic, No.12 single: black; red; white
Wire, thermoplastic: No. 12-2 WG
Wire, nuts, solderless: size 72B, 73B, 74B

Miscellaneous

Anchors, lead: 1/4 in. star screw-in
Blades, coping saw: 6 3/8 in.
Blades, hacksaw: 18-point carbon steel
Blades, hacksaw: 24-point carbon steel
Degreaser, spray can
Emery cloth: fine, medium, coarse
Glue, epoxy resin
Hand cleaner
Penetrating oil
Screws, assorted: No. 6, 8, and 10; 1/2 in., 3/8 in., and 3/4 in.; sheet metal-type
Tape, masking: 1 in.
Tape, plastic: 3/4 in.
Toggle bolts: 1/4 in. x 4 in. long
Torch fuel, propane

Plumbing Supplies

Bends and Fittings

Bend, quarter: 1/2 in.
Caps: 1/2 in.
Cast iron 1/4 bends: 2 in.; 4 in.
Cast iron T's: 2 in.; 4 in.
Cast iron Y's: 2 in.; 4 in.
Cast iron clean-out plugs: 2 in.
Copper fittings: L's, T's, reducers
L's, galvanized: 1/2 in.
Faucets, galvanized and copper: 1/2 in.
Nipples, galvanized: 1/2 in., 1 in., 1 1/2 in.
Reducing fittings, galvanized: 1/2 in. to 3/4 in.
T's, galvanized: 1/2 in., 1 in., 1 1/2 in.
Unions, galvanized: 1/2 in., 1 in., 1 1/2 in.

Pipe and Tubing

Cast iron pipe: 2 in., 4 in.
Copper tubing: various sizes
and fittings
Galvanized pipe: 1/2 in.; 1 in.; 1 1/2 in.

Miscellaneous

Cutting oil
Lead
Oakum
Propane bottles, replacement
Soldering flux

17.1001 Carpentry

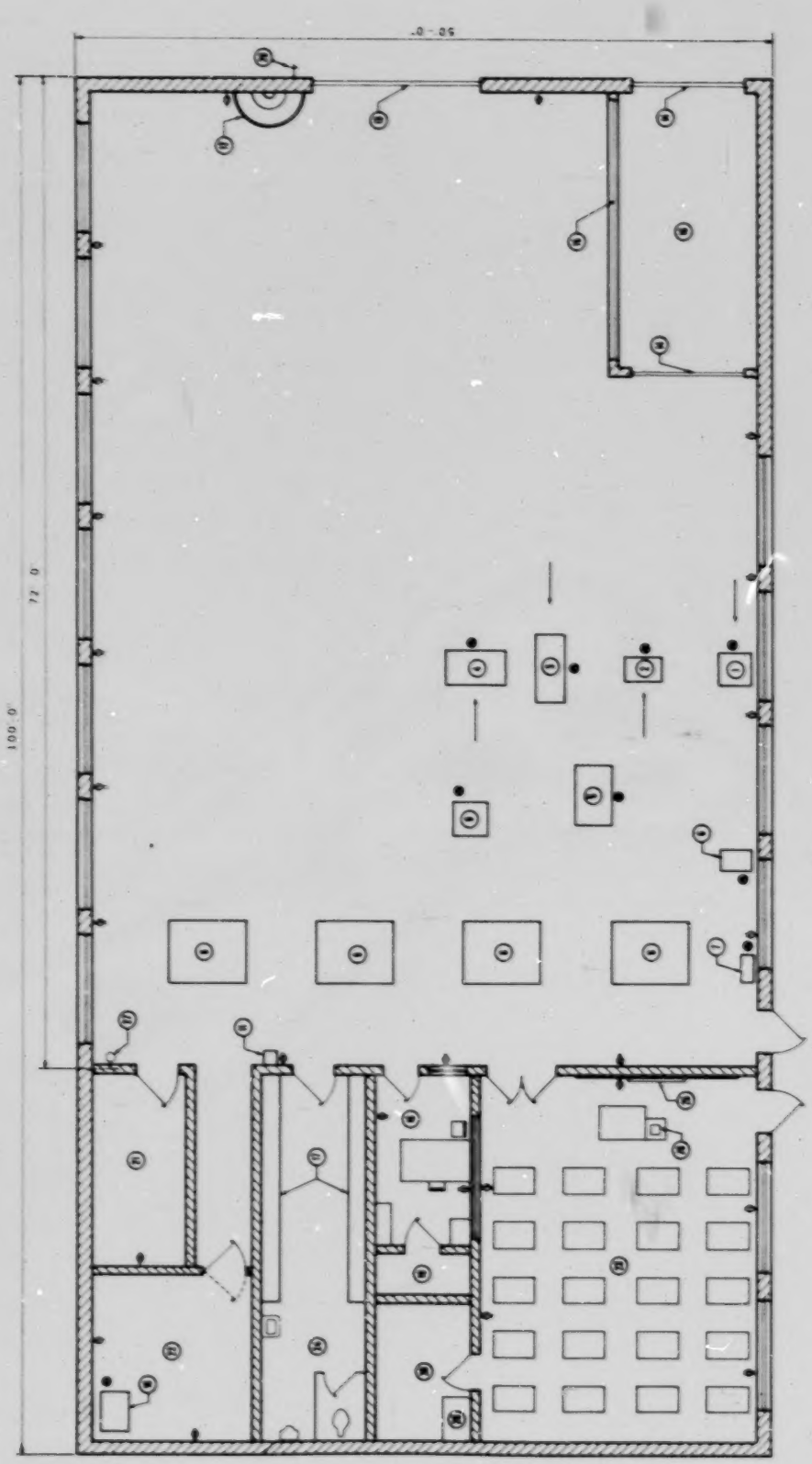
Classroom and shop experiences involving layout, fabrication, assembly, installation, and repair of structural units. Emphasized in instruction are the care and use of hand and power tools, equipment, and materials; common systems of frame construction and the principles involved; and sketching, blueprint reading, applied mathematics, and materials estimating.

LEGEND

Carpentry

1. Radial-arm saw — min 3-hp
2. Surfacer — min 5-hp
3. Jointer — min 1-hp
4. Table saw — min 3-hp
5. Band saw — min 1½-hp
6. Drill press — min ¾-hp
7. Grinder — min ¾-hp
8. Workbenches
9. Shaper — min 2-hp
10. Air compressor — min 2-hp
11. Water cooler
12. Half-round sink
13. Overhead door — 12' x 10'
14. Overhead door — 8' x 10'
15. Masonry wall 3½' high; expanded-metal to ceiling
16. Lumber rack
17. Lockers
18. Office — 7' 6" x 13'
19. Teacher's storage
20. Storage
21. Toolroom — 8' 3" x 14' 6"
22. Supply room — 13' x 13' 6"
23. Classroom — 21' 3" x 28'
24. Toilet — 8' x 11'
25. Pull-down screen
26. Overhead projector
27. Fire extinguisher
28. Drawing cabinet
29. Frost free hose bib

Ⓐ 230-volt, 3-phase


CARPENTRY

SUPPLY LIST

Carpentry Supplies

Abrasives

Sanding belts
Sanding discs
Sandpaper: fine, medium, and coarse grit sheets

Adhesives

Casein glue
Mastic, waterproof
Synthetic-resin glue

Hardware

Anchors, ram set
Bolts, carriage: assorted sizes
Bolts, flat head: assorted sizes
Brads, wire: ¼ in., ½ in., 1 in., and 1¼ in.
Butt hinges: 3½ in.
Cabinet hinges: ⅜ in. offset
Cabinet pulls
Catches, friction
Latches, night
Locks, cylinder
Nails, casing: 8d
Nails, common: 8d, 12d, and 16d
Nails, finish: 6d and 8d
Nails, flooring: Mechanical hammer-type
Nails, galvanized roofing: ¾ in. and 1 in.
Nails, plasterboard: 1¾ in.
Screws, wood, No. 8: F.H., 1 in.
Screws, wood No. 8: F.H., 1¼ in.
Screws, wood, No. 6: F.H., 1 in.
Screws, wood, No. 6: F.H., 1 ¼ in.
Screws, wood, No. 8: R.H., 1¼ in.
Screws, wood, No. 6: R.H., 1¼ in.
Staples, heavy-duty: ⅜ in., ¾ in., and 1¼ in.

Paint

Alcohol, denatured
Brushes, paint: 2 in. and 3 in.
Oil stain, light oak
Oil stain, walnut
Paint thinner
Shellac, clear
Varnish, clear

Wood

Casing molding: 4 in. and 6 in.
Flooring, center match: 1 in. x 6 in.
Flooring, hardwood: 1 in. x 4 in.
Plywood: ¾ in. A-D, 4 ft. x 8 ft.
Quarter round
Shoe mold
Siding, bevel: 1 in. x 6 in. x 8 in.
Storm sheathing: 1 in. x 6 in.
Window sashes: 32 in. x 54 in.
Yellow pine, No. 1: 1 in. x 6 in. x 10 ft.
Yellow pine, No. 2: 2 in. x 4 in. x 10 ft.
Yellow pine, No. 2: 2 in. x 4 in. x 12 ft.
Yellow pine, No. 2: 2 in. x 4 in. x 16 ft.
Yellow pine, No. 2: 2 in. x 6 in. x 12 ft.
Yellow pine, No. 2: 2 in. x 8 in. x 12 ft.
Yellow pine, No. 2: 2 in. x 12 in. x 16 ft.
Yellow pine, No. 2: 1 in x 4 in. x 12 ft.
Yellow pine, No 2: 1 in. x 6 in. x 12 ft.
Yellow pine, No. 2: 1 in. x 8 in. x 12 ft.

Roofing

Roofing-felt: 15-lb and 30-lb
Shingles, asphalt

17.12 Diesel-Engine Mechanics

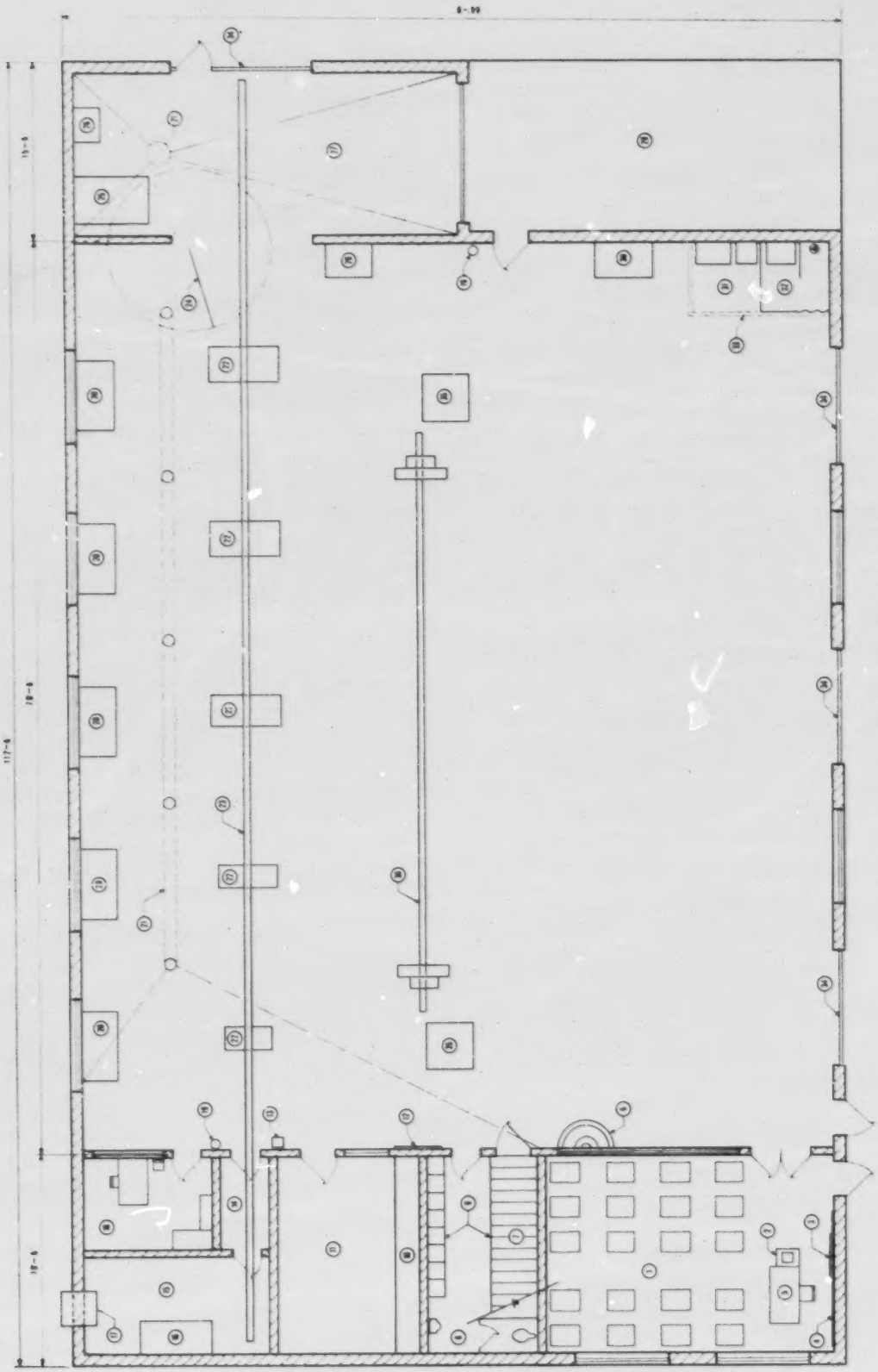
Classroom and shop experiences concerned with all phases of repair work on diesel engines used to power buses, trucks, electrical generators, construction machinery, and similar equipment. Instruction and practice are provided in diagnosis of malfunction; disassembly of engines and examination of parts; reconditioning and replacement of parts; repair and adjustment of fuel injection systems, oil and water pumps, generators, governors, auxiliary and accompanying power units, controls, and transmissions. The uses of technical manuals, of a variety of hand and power tools, and of testing and diagnostic equipment also are studied.

LEGEND

Diesel-Engine Mechanics

1. Classroom — 18' 6" x 26'
2. Overhead projector
3. Pull-down screen
4. Chalkboard
5. Teacher's desk
6. Half-round sink
7. Stairs
8. Toilet
9. Lockers
10. Tool cabinet
11. Toolroom
12. Tack board
13. Water cooler
14. Clean-room foyer
15. Clean room
16. Workbench
17. Air conditioner
18. Office — 8' 8" x 12' 4"
19. Fire extinguisher
20. Workbench
21. Floor drain
22. Engines
23. Overhead-hoist rail
24. Jib crane
25. Hot tank
26. Steam cleaner — min ½-hp
27. Cleaning pad
28. Small-parts washer
29. Cleaning pad
30. Worktable
31. Oxyacetylene welding area
32. Arc welding booth
33. Exhaust hood
34. Overhead door — 10' x 12'
35. Ventilating fan — min ½-hp
36. Exhaust system

(▲) 230-volt, 3-phase



DIESEL-ENGINE MECHANICS

SUPPLY LIST

Diesel — Engine Mechanics Supplies

Abrasives

Commutator paper
Crocus cloth
Emery cloth
Sandpaper (aluminum oxide, 400-, 240-, 100-grit)
Valve lapping and grinding compound

Adhesives

Electrical tape
Gasket cement: hard-dry, soft-dry
Masking tape
Plastic cement
Rubber cement
Upholstery cement
Weatherstrip cement

Batteries

Flashlight
Truck: 6-v, 12-v, 24-v

Chalk

White; colored

Cleaning

Alcohol
Baking soda
Brooms
Chamois filters
Cleaning cloths (shop rags)
Floor-sweeping compound
Oil-solvent compound
Radiator-cleaning compound
Soaps: car wash, hand, steam cleaner, abrasive scouring powder
Solvents, cleaning: engine, carburetor, odd-parts (all should be nonflammable whenever possible)
Sweeping compound

Cutting

Blades, hacksaw: 18 teeth
Blades, hacksaw: 24 teeth
Cutting oil

Electrical

Bulbs: 6-v, 12-v, 24-v; various candlepower
Bulbs: incandescent and fluorescent
Fuses
Generator brushes
Starter brushes
Terminals: assorted for the below listed wire sizes, both solder and solderless types; battery-type, lead coated
Wire: 8-, 10-, 12-, 14-, 16-, 18-, 20-, 22-gages, in solid colors and braids

Fastener Assortment

Bolts and nuts: NF, NC: steel, brass
Cotter keys
Screws, machine: round and flat heads
Washers: flat, lock, star

Fire Extinguishers

For gasoline and oil fires
For electrical fires

Fittings and Connections

Copper tubing: 3/16 in., 1/4 in., 3/8 in., 1/2 in., 5/8 in.
Copper tubing fittings: T's, L's, unions, and ferrules
Steel tubing: 3/16 in., 1/4 in., 3/4 in., 1/2 in.,5/8in.
Steel tubing fittings: T's, L's, unions, and ferrules

Gage Stock: sheet brass
in varying thicknesses

Gaskets

Asbestos: sheet stock
1/16 in. thick
Assorted items: head, pan,
water pump, manifold, etc.
Rebuild packs for engines:
three packs per engine
Sheet stock: tan fiber,
1/32 in. thick

Hacksaw Blades: 18, 24,
32 teeth per inch

Hose

Engine coolant
Hose clamps
Vacuum
Windshield wiper

Lubricant

Calibrating oil
Chassis grease
Differential grease
Door-striker plate
Heat-control valve
Hypoid gear
Lithium grease
Lubriplate
Oil: 10-, 20-, 30-weight: detergent
and nondetergent
Penetrating or rust-solvent oil
Powdered graphite, in a dispenser
Power-steering, automatic-
transmission oil
Rubber lubricant
Silicone, aerosol spray
Transmission (standard) grease
Upper-cylinder lubricant
Wheel bearing grease
White lead

Paint

Brushes: assorted, 3/4 in. — 3 in. width
Paint, engine: heat-resistant; red, yellow,
green, gray, blue, and black colors
Paint thinner

Parts

It is essential that the school have in stock
such items as the following: bearing sets,
ring sets, pistons, seals, shims, pulleys,
and water pumps.

Plastigage

Prussian Blue

Soldering

Acid swab
Flux
Muriatic acid
Sal ammoniac
Solder, acid-core
Solder, rosin-core

Welding and Brazing

Acetylene, in cylinders
Brazing flux
Brazing rod: 1/8, 3/16
Oxygen, in cylinders
Sal ammoniac
Soapstone
Soft solder: bar, wire
Welding electrode: 5/32-AWS-E6010
or 6011
Welding rod: mild steel, copper coated,
1/16, 3/32, 1/8

Miscellaneous

Antifreeze
Masking tape
Valve grinding and lapping compound

17.13 Industrial Drafting

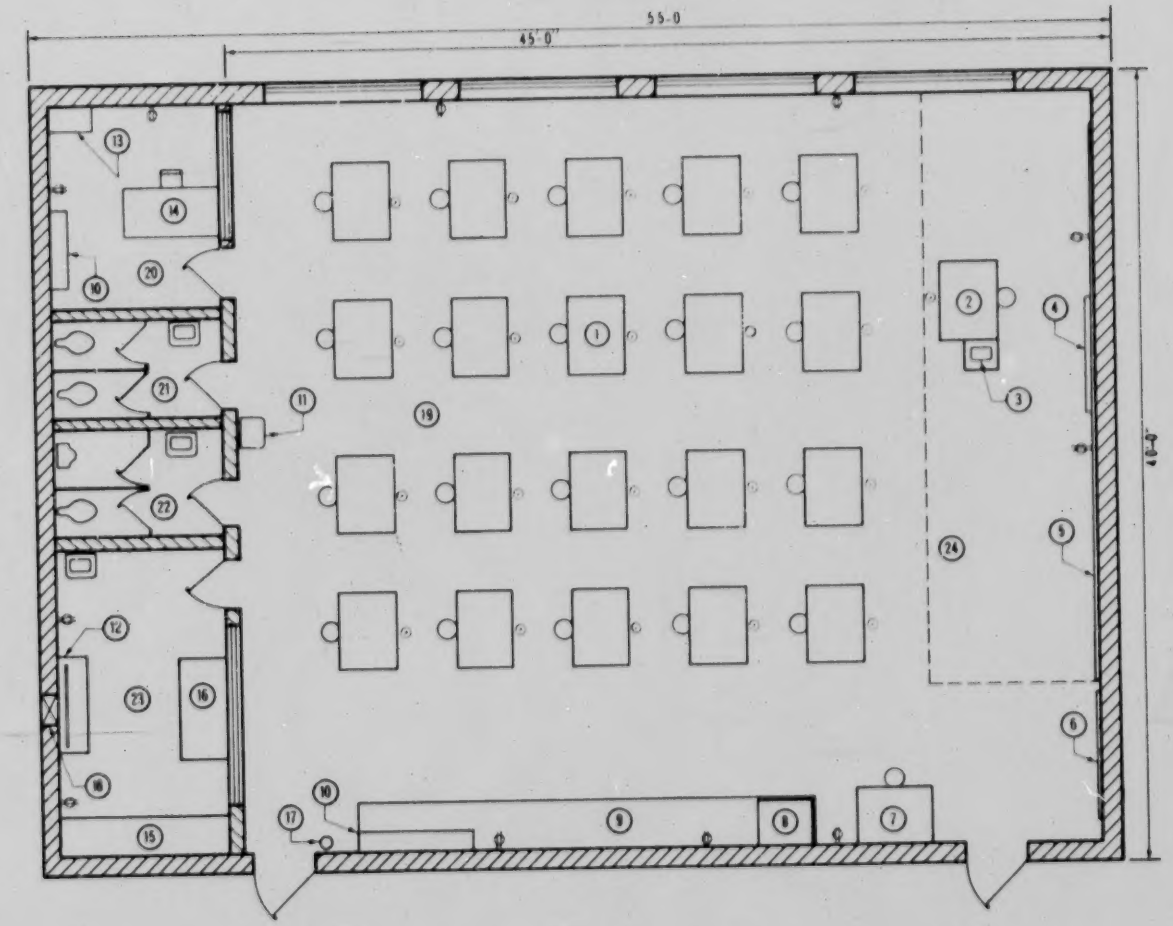
Organized specialized learning experiences which emphasize theory, use of the drafting room and laboratory and shop work as each relates to gathering and translating of data or specifications, including the aspects of planning, preparing, and interpreting mechanical, architectural, structural, topographical, and other drawings and sketches. Instruction is designed to provide experiences in drawing; the use of reproduction materials, equipment, and processes; and in the preparation of reports and data sheets for writing specifications.

LEGEND

Industrial Drafting

1. Student drawing tables
2. Teacher's table
3. Overhead projector
4. Pull-down screen
5. Chalkboard
6. Tack board
7. Tracing table
8. Paper cutter
9. Storage cabinet (work space on top)
10. Bookshelf
11. Water cooler
12. Blueprint machine
13. File cabinet
14. Teacher's desk
15. Locked storage cabinet
16. Worktable
17. Fire extinguisher
18. Exhaust fan
19. Open-shop — 45' x 40'
20. Office — 11' 6" x 10'
21. Ladies' room — 10' x 5' 5"
22. Men's room — 10' x 5' 5"
23. Blueprint room — 10' x 17'
24. Instructor's platform, optional

⊙ 115-volt floor receptacles, flush mounted



INDUSTRIAL DRAFTING

SUPPLY LIST

Industrial Drafting Supplies

Drafting

Ammonia developer

Dusting powder, for drafting tables

India ink, black

Non-reproducing paper

Printing paper (for blueprints)

Rolls, drafting tape, opaque

Rolls, drafting tape, transparent

Vellum

Wood pencils, F, 2H, 3H, 6H

Teaching

Acetate film; roll for overhead projector

Pencils for drawing on transparency acetate
assorted colors

Rubber bands

Staples

Thumb tacks

17.1002 Construction Electricity

Classroom and shop experiences concerned with the layout, assembly, installation, testing, and maintenance of electrical fixtures, apparatus, and wiring used in electrical systems. Instruction is provided in the reading, interpretation of blueprints, diagrams, and specifications prepared by others. Instruction is also provided in the installation of residential, commercial, and industrial wiring based on controlling electrical codes.

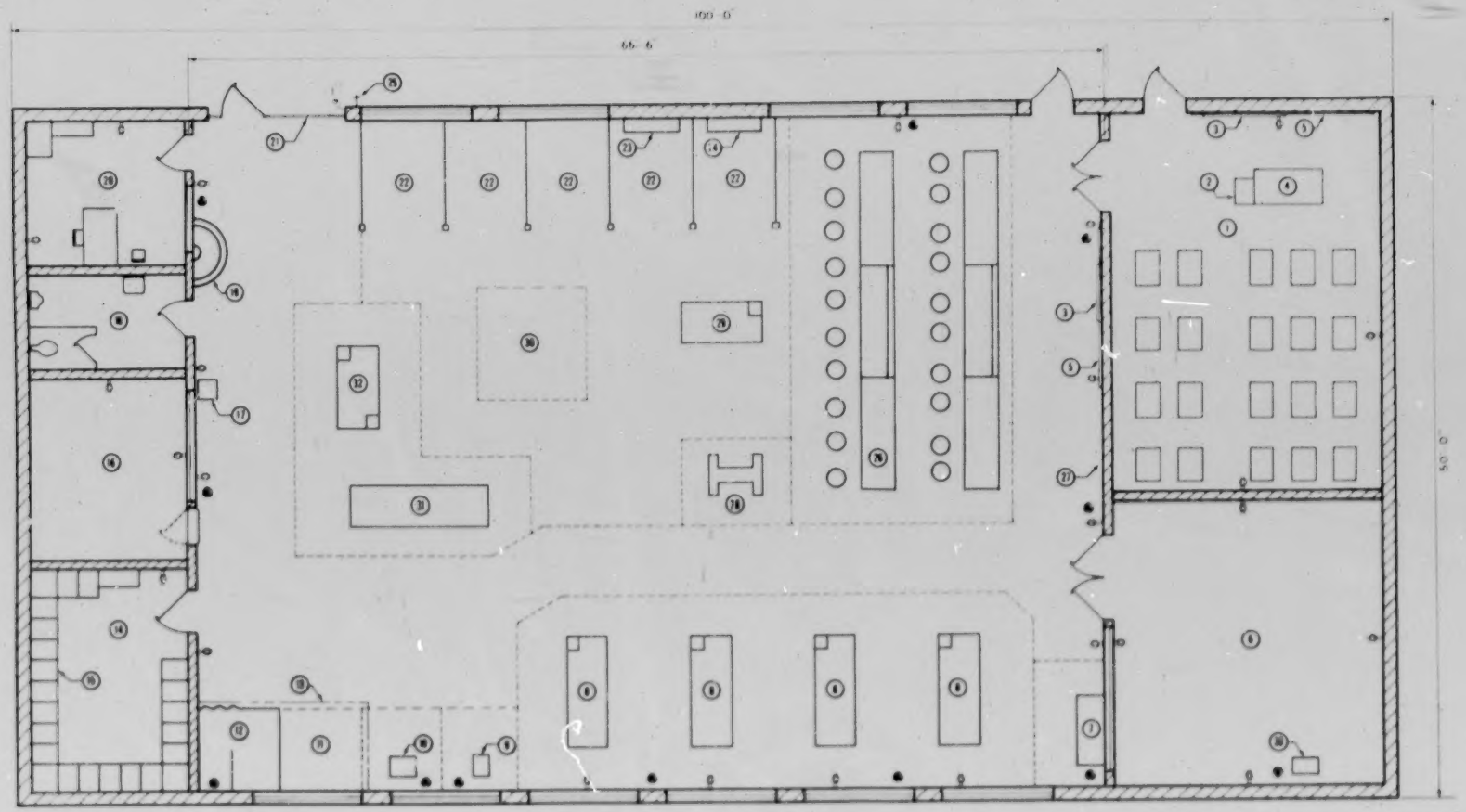
LEGEND

Construction Electricity

1. Classroom — 21' x 28' 6"
2. Overhead projector
3. Pull-down screen
4. Demonstration table
5. Chalkboard
6. Storage — 21' x 21' 6"
7. Armature lathe — min ¾-hp
8. Workbenches, with vise
9. 15" Drill press — min ¾-hp
10. Grinder — min ½-hp
11. Oxyacetylene welding area
12. Arc welding area
13. Exhaust hood
14. Dressing room — 12' 6" x 17' 6"
15. Lockers
16. Toolroom — 12' 6" x 17' 6"
17. Water cooler
18. Toilet — 12' 6" x 17' 6"
19. Half-round sink
20. Office — 12' 6" x 12'
21 Overhead door — 10' x 10'
22. Wiring-mockup booth
23. Power panel: for training purposes; 225-amp, 3-phase
24. Power panel: for training purposes; 400-amp, 3-phase
25. Frost free hose bib
26. Workbenches*
27. Bulletin board
28. Hydraulic press
29. Worktable, with vise
30. Heat and light mockup
31. Conduit rack
32. Worktable, with pipe vises
33. Air compressor

(A) 230-volt, 3-phase

*See equipment list for electrical power requirements.



CONSTRUCTION ELECTRICITY

SUPPLY LIST

Construction Electricity Supplies

Abrasives

Aluminum-oxide cloth: 100- and 240-grit sheets
Emery cloth: coarse (No. 12 to 24), sheet-type
Emery cloth: medium (No. 30 to 60), sheet-type
Emery cloth: fine (No. 70 to 120), sheet-type

Adhesives

Electrical tape
Masking tape
Plastic cement

Cutting

Blades, hacksaw: 18 teeth
Blades, hacksaw: 24 teeth
Cutting oil

Devices, Lighting

Ballast, fluorescent: 40-watt, 115-v
Bulb, incandescent lamp: 40-, 60-, 100-, 150-watt; 115-v
Lamps, fluorescent: 40-watt, 48 in. x 1½ in., bipin preheat type
Lamps, fluorescent: 40-watt, 48 in. x 1½ in., bipin rapid start
Lamps infrared: 250-watt, 120-v, medium base
Spot lamps, incandescent: 150-watt, 115-v

Fixtures

Bases, lamp: medium base
Bases, lamp: miniature screw-type
Boxes, conduit: ½ in. size, 4 in. x 2⅛ in. x 1½ in.
Boxes, outlet: ½ in., ¾ in., and 1 in. K.O.
Boxes, receptacle: single duplex
Boxes, switch: 2⅛ in. x 4 in., ½ in. K.O.
Boxes, switch: 2⅛ in. x 4 in., ¾ in. K.O.
Boxes, switch: 2⅛ in. x 4 in., 1 in. K.O.
Receptacles, duplex
Receptacles, single

Electrical Control

Circuit breakers: various sizes
Fuses, cartridge: renewable-type, 15-amp
Fuses, cartridge: renewable-type, 20-amp
Fuses, cartridge: renewable-type, 30-amp
Fuses, cartridge: renewable-type, 40-amp
Fuses, cartridge: renewable-type, 55-amp
Fuses, plug: 5-, 15-, 20-, and 30-amp
Starters, fluorescent: 40-watt, 115-volt reset
Starters, fluorescent: 40-watt, 115-volt standard
Switches, single-pole: T-rated, 10-amps, 125-v
Switches, three-way: T-rated, 10-amps, 125-v
Switches, four-way: T-rated, 5-amps, 125-v

Fittings and Connections

Conduit, E.M.T.: ½ in.
Conduit, E.M.T.: ¾ in.
Conduit, E.M.T.: 1 in.
Conduit, flexible steel : ½ in.
Conduit, flexible steel: ¾ in.
Conduit, flexible steel: 1 in.
Conduit, rigid: ½ in. galvanized
Conduit, rigid: ¾ in. galvanized

Conduit, rigid: 1 in. galvanized
Connectors, B-X cable: ½ in.
Connectors, E.M.T.: ½ in. indentor-type
Connectors, E.M.T.: ¾ in. indentor-type
Connectors, E.M.T.: 1 in. indentor-type
Connectors, E.M.T.: ½ in., two-piece steel
Connectors, E.M.T.: ¾ in., two-piece steel
Connectors, E.M.T.: 1 in., two-piece steel
Connectors, flexible-steel: ½ in., squeeze-type
Connectors, flexible-steel: ¾ in., squeeze-type
Connectors, flexible-steel: 1 in. squeeze-type
Connectors, split-bolt: assorted
Couplings, E.M.T.: ½ in., ¾ in., compression-type
Couplings, E.M.T.: ½ in., ¾ in.; indentor-type
Couplings, E.M.T.: 1 in., indentor-type
Insulators, E.M.T.: ½ in., indentor-type
Insulators, E.M.T.: ¾ in., indentor-type
Insulators, E.M.T.: 1 in., indentor-type
Steel straps, E.M.T.: ½ in., 1-hole-type
Steel straps, E.M.T.: 1 in., 1-nole-type
Steel straps, E.M.T.: ¾ in., 1-hole-type

Soldering

Acid swab
Flux, noncorrosive paste-type
Muriatic acid
Sal ammoniac
Solder, acid-core: 50/50 and 60/40
Solder, rosin-core: 50/50 and 60/40

Wire

Cable, entrance: No.6
Tape, masking: 1 in. and 1½ in.
Tape, plastic: ½ in., 1 in., and 1½ in.
Wire, single-conductor: No. 12 TW, black
Wire, single-conductor: No. 12 TW, white
Wire, single-conductor: No. 10 TW, black
Wire, single-conductor: No.10 TW, white
Wire nuts: 72B
Wire nuts: 73B
Wire nuts: 74B

17.2302 Machine Shop

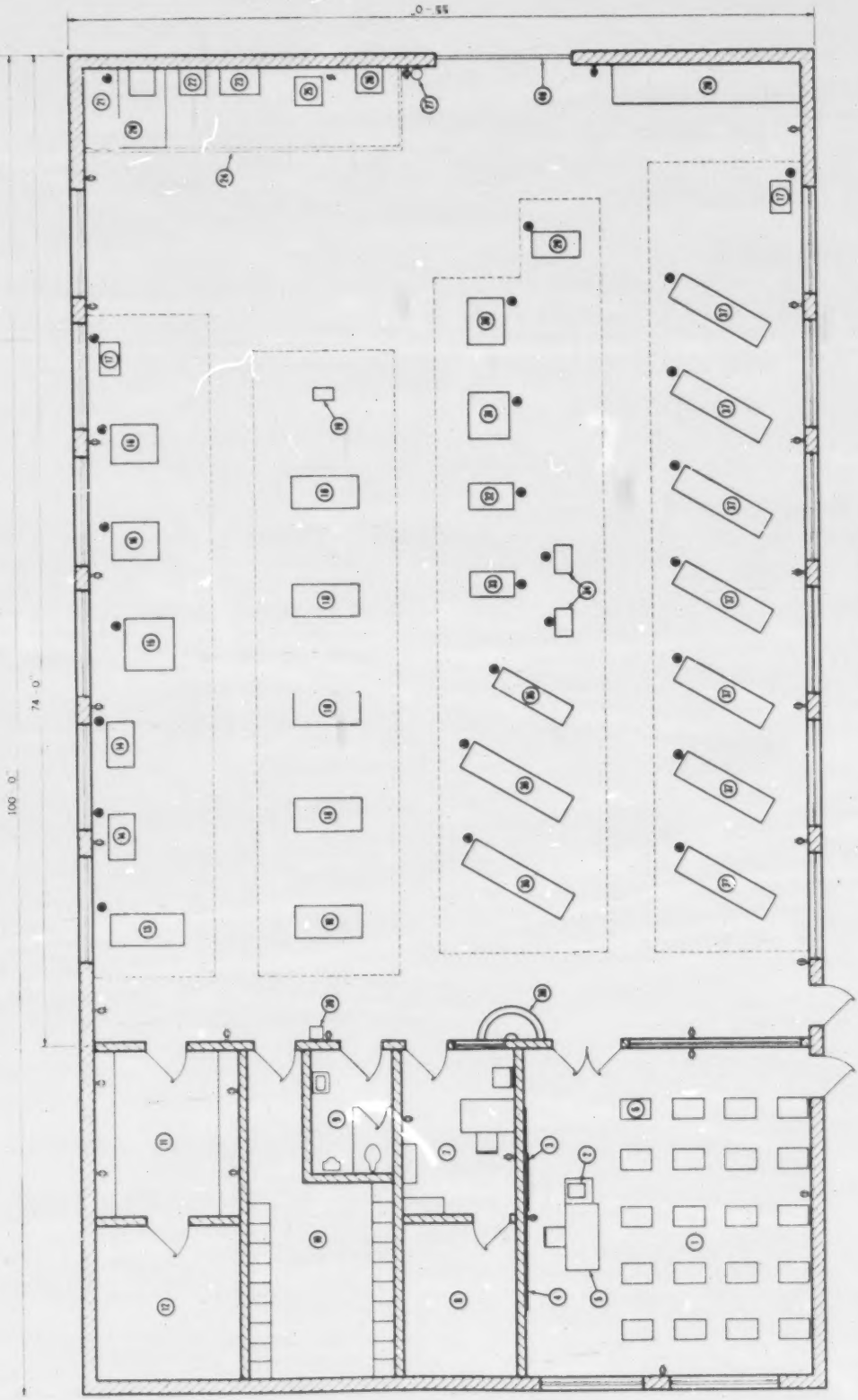
Specialized classroom and shop experiences concerned with all aspects of shaping metal parts. Instruction involves making computations relating to work dimensions, tooling, feeds, and speeds of machining. Also emphasized are work on the bench and on lathes, shapers, milling machines, grinders, and drills; uses of precision measuring instruments, such as layout tools, micrometers, and gages; methods of machining and heat treatment of various metals; blueprint reading; and the layout of machine parts. Instruction prepares the pupil to operate and repair all machines.

LEGEND

Machine Shop

1. Classroom — 26' x 22' 6"
2. Overhead projector
3. Pull-down screen
4. Chalkboard
5. Teacher's desk
6. Student desks
7. Office — 9' x 13'
8. Storage — 9' x 13'
9. Toilet — 7' x 10'
10. Locker room — 16' x 11' 6"
11. Toolroom — 12' x 13'
12. Storage — 12' x 13'
13. Shaper — min 7½-hp
14. Surface grinder — min 2-hp
15. Vertical-milling machine — min 1½-hp
16. Horizontal-milling machine — min 3-hp
17. Grinder — min 1-hp
18. Workbench
19. Anvil
20. Welding booth
21. Welding machine, arc — min 100-amp input
22. Welding table
23. Oxyacetylene welding outfit
24. Exhaust hood
25. Heat-treating furnace
26. Quenching-tank
27. Fire extinguisher
28. Materials rack
29. Reciprocating power saw — min 1½-hp
30. Arbor press
31. Band saw — min 1½-hp
32. 15" Drill press — min 1-hp
33. 20" Drill press — min 1½-hp
34. Grinder — min ½-hp
35. 10" Lathe — min 1-hp
36. 16" Lathe — min 5-hp
37. 13" Lathe — min 3-hp
38. Half-round sink
39. Water cooler
40. Overhead door — 10' x 10'

▲ 230-volt, 3-phase



VOCATIONAL MACHINE SHOP

SUPPLY LIST

Machine Shop Supplies

Abrasives

Aluminum-oxide cloth: 100-grit sheets
Aluminum-oxide cloth: 240-grit sheets
Belts, abrasive: 4 in. x 48 in.; 100-grit
Emery cloth: fine (No. 70 to 120), sheet-type
Emery cloth: medium (No. 30 to 60), sheet-type
Emery cloth: coarse (No. 12 to 24), sheet-type
Polishing compound
Sanding disc: 6 in.
Wheel-dresser burrs
Wire brushes

Cleaning

Brooms
Towels, shop

Cutting

Blades, band saw: for 20-in. saw
Blades, hacksaw: 18 teeth
Blades, hacksaw: 24 teeth
Blades, reciprocal saw
Tool bits, cutting: high speed (for lathe and shaper)

Drawing and Marking

Chalk
Paper, drawing: 11 in. x 17 in.
Pencils, drawing: F, 2H, & 4H
Prussian blue

Fasteners

Bolts, nuts, and washers: assorted sizes and types
Capscrews: assorted sizes and types

Lubrication

Hydraulic oil
Lathe-center compound
Lubricant, lard oil
Lubricant oil, type A
Lubricant oil, type B
Lubricant oil, type C
Soluble oil
White lead

Stock

Angle iron: 1 in. x 1 in. x ⅛ in., 20-ft. lengths
Angle iron: 1½ in. x 1½ in. x ⅛ in., 20-ft. lengths
Band iron: ⅛ in. x 1 in., 20-ft. lengths
Band iron: 3/16 in. x 1 in.
Band iron: ¼ in. x 2 in.
Bar stock: Cold-rolled, drawn steel; aluminum; brass; copper; bronze
- Flats: ½ in. x 2 in.
- Rounds: ¼ in.; ½ in.; ¾ in.; 1 in.; 2 in.; 3 in.; 4 in.; 5 in.
- Square: 1 in. x 1 in.; 2 in. x 2 in.; 3 in. x 3 in.; 4 in. x 4 in.
- Cast iron stock
- Steel plates: ¼ in.; ½ in.; ¾ in.

Welding and Brazing

Acetylene
Electrodes, arc (Manual-metal): mild-steel, coated
Flints, renewal
Flux, brazing: brass
Flux, brazing: bronze
Flux, brazing: cast iron
Flux, brazing: copper
Headbands, replacement: for welding goggles
Lens, cover-replacement: for goggles
Oxygen
Plates, cover: for welding helmets

Plates, filter: 2 in. x 4½ in.,
for welding helmet
Rods, brazing
Rods, oxyacetylene welding:
mild-steel, copper-coated
Rods, oxyacetylene welding:
medium carbon, high strength
Rods, oxyacetylene welding: non-ferrous
aluminum, brass, bronze, etc.
Soapstone

17.2304 Metal Trades

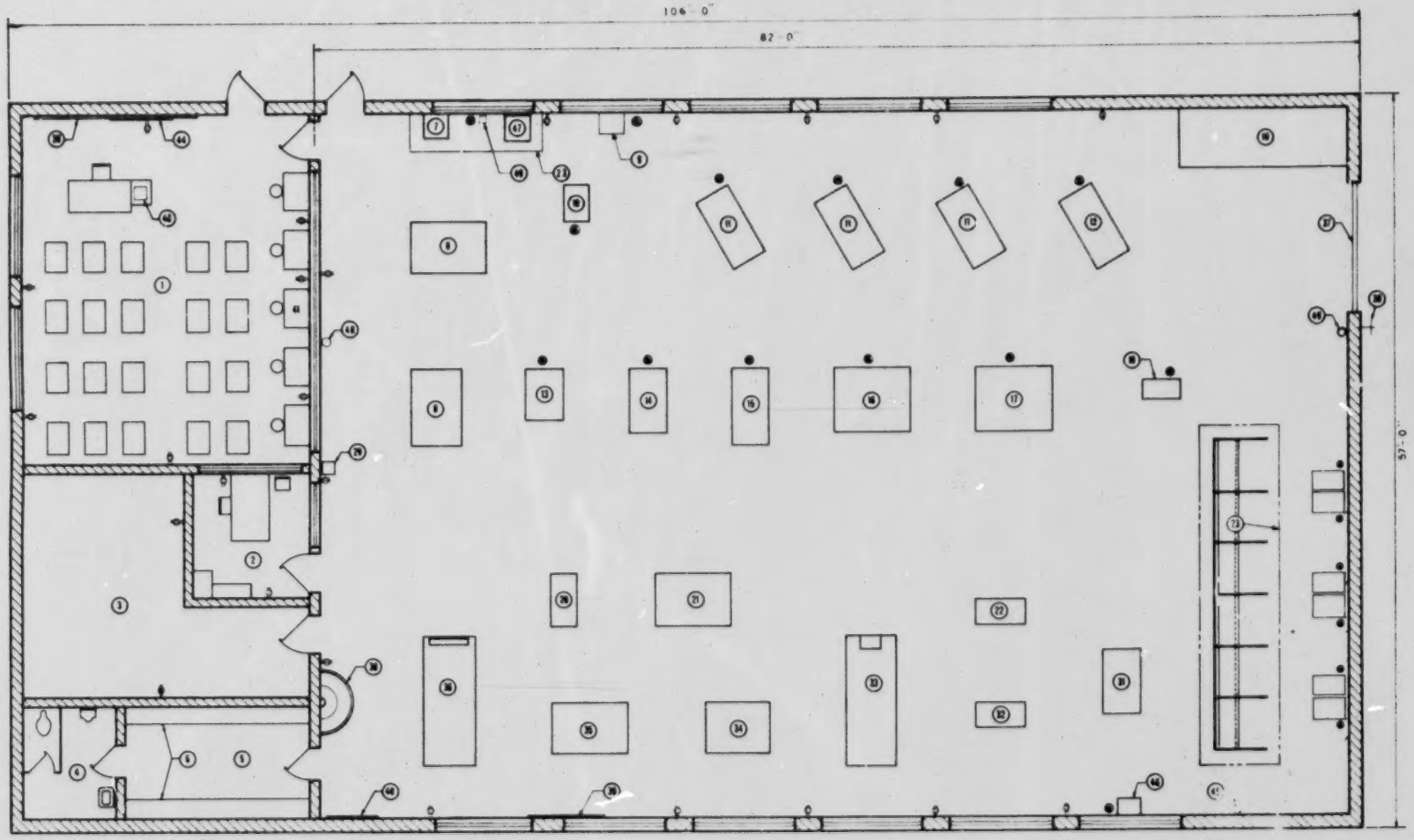
Specialized learning experiences designed to prepare an all-round metalworker capable of fabricating and assembling a variety of products in many industries. Instruction includes layout; sequence of operations; setting up and operating fabricating machines, such as lathes, shapers, milling machines, grinders, and drills; positioning, aligning, fitting, and welding parts; and designing and constructing templates and fixtures.

LEGEND

Metal Trades

1. Classroom — 28' 6" x 24'
2. Office — 9' x 10' 6"
3. Tool & storage — 18' x 24'
4. Toilet — 10' x 8' 6"
5. Dressing area — 10' x 15' 6"
6. Lockers
7. Gas heat-treating furnace
8. Worktables
9. Grinder — min 1-hp
10. Drill press — min 1-hp
11. 13" Lathe — min 3-hp
12. 16" Lathe — min 5-hp
13. 20" Band saw — min 1½-hp
14. Surface grinder — min ¾-hp
15. 12" Shaper — min 2-hp
16. Vertical-milling machine — min 1-hp
17. Horizontal mill — min 3-hp
18. Reciprocating power saw — min 1-hp
19. Materials rack
20. Bar folder
21. Workbench with rotary machine & setting-down machine
22. Slip roll
23. Exhaust hood
24. Welding machine, arc (TIG) — min 100-amp input
25. Welding machine, motor-generator type — min 100-amp input
26. Welding machine, arc — min 100-amp input
27. Welding machine, arc — min 100-amp input
28. Oxyacetylene welding outfit
29. Water cooler
30. Frost free hose bib
31. Arbor press
32. Universal box and pan brake
33. Workbench with slitting shear
34. Squaring-shear
35. Steel-bending brake
36. Workbench with stake plate
37. Overhead door — 10' x 10'
38. Half-round sink
39. Chalkboard
40. Tack board
41. Drawing tables (Local purchase)
42. Welding table
43. Overhead projector
44. Pull-down screen
45. Water inlet and outlet
46. Pedestal grinder — min 2-hp
47. Quenching-tank
48. Fire extinguisher
49. Natural-gas inlet

△ 230-volt, 3-phase



METAL TRADES

SUPPLY LIST

Metal Trades Supplies

Abrasives

Aluminum-oxide cloth: 100-grit sheets
Aluminum-oxide cloth: 240-grit sheets
Emery cloth: fine (No. 70 to 120), sheet-type
Emery cloth: medium (No. 30 to 60) sheet-type
Emery cloth: coarse (No. 12 to 24) sheet-type
Sanding discs: 7 in., 80-grit
Wheel-dressing burrs

Cleaning

Brooms
Hand cleaner
Kerosene
Shop towels

Cutting

Blades, band saw: for 20-in. saw
Blades, hacksaw: 18-point
Blades, hacksaw: 24-point
Blades, reciprocal hacksaw
Tool bits, cutting: high-speed (for lathe, and shaper)

Drawing and Marking

Chalk
Paper, drawing: 11 in. x 17 in.
Pencils, drawing: F,2H,4H
Prussian blue
Soapstone

Fasteners

Bolts: 3/16 in. x 1/2 in.
Bolts: 1/4 in. 1/2 in.
Bolts: 1/16 in. x 3/4 in.
Bolts, nuts, and washers: assorted sizes and types for machine shop work
Rivets, aluminum: 1- to 5-lb sizes
Rivets, copper: 1- to 5-lb sizes
Rivets, galvanized: 1- to 5-lb sizes
Screws: No. 4 x 1/2 in.
Screws: No. 6 x 1/2 in.
Screws: No. 8 x 1/2 in.
Screws: No. 10 x 1/2 in.
Screws: No. 12 x 3/4 in.
Screws: No. 14 x 3/4 in.
Screws: assorted sizes and types for machine shop work

Lubrication

Lathe-center compound
Lubricant, lard oil
Lubricating oil, type A
Lubricating oil, type B
Lubricating oil, type C
Soluble oil
White lead

Sheet metal

Aluminum: No. 0.32, half hard, 3-ft. x 8-ft. sheets
Copper: 16 oz.
Galvanized: 18-gage, 3-ft. x 8-ft. sheets
Galvanized: 22-gage, 3-ft. x 8-ft. sheets
Galvanized: 24-gage, 3-ft. x 8-ft. sheets
Galvanized: 26-gage, 3-ft. x 8-ft. sheets
Galvanized: 30-gage, 3-ft. x 8-ft. sheets

Soldering

Acid swab
Flux, noncorrosive paste-type
Muriatic acid
Sal ammoniac
Solder, acid core: 50/50 and 60/40
Solder, rosin core: 50/50 and 60/40

Stock

Angle iron: 1 in. x 1 in. x 1/8 in., 20-ft lengths
Angle iron: 1 1/2 in. x 1 1/2 in. x 1/8 in., 20-ft. lengths
Band iron: 1/8 in. x 1 in., 20-ft. lengths
Band iron: 3/16 in. x 1 in.
Band iron: 1/4 in. x 2 in.
Bar stock: cold-rolled, drawn steel; aluminum, brass, copper, and bronze
- Flats: 1/2 in. x 2 in.
- Rounds: 1/4 in.; 1/2 in.; 3/4 in.; 1 in.; 2 in.; 3 in.; 4 in.; 5 in.
- Square: 1 in. x 1 in.; 2 in. x 2 in.; 3 in. x 3 in.; 4 in. x 4 in.

Cast iron stock
Steel plates: 1/4 in.; 1/2 in.; 3/4 in.

Welding and Brazing

Acetylene
Argon
Carbon dioxide/argon 75-25 premix
Electrodes, arc (manual-metal): mild-steel, coated
Electrodes, tungsten: 3/32-6 in.; 1/16-6 in.
Flints, renewal
Flux, aluminum welding
Flux, brazing: brass
Flux, brazing: bronze
Flux, brazing: cast iron
Flux, brazing: copper
Headbands, replacement: for welding goggles
Lens, cover-replacement: for goggles
Plates, cover: for welding helmets
Oxygen
Rods, brazing
Rods, oxyacetylene welding: mild-steel, copper-coated
Rods, oxyacetylene welding: medium-carbon, high-strength, stainless
Rods, oxyacetylene welding: non-ferrous, aluminum, brass, bronze, etc.

17.1503 Radio and Television Repair

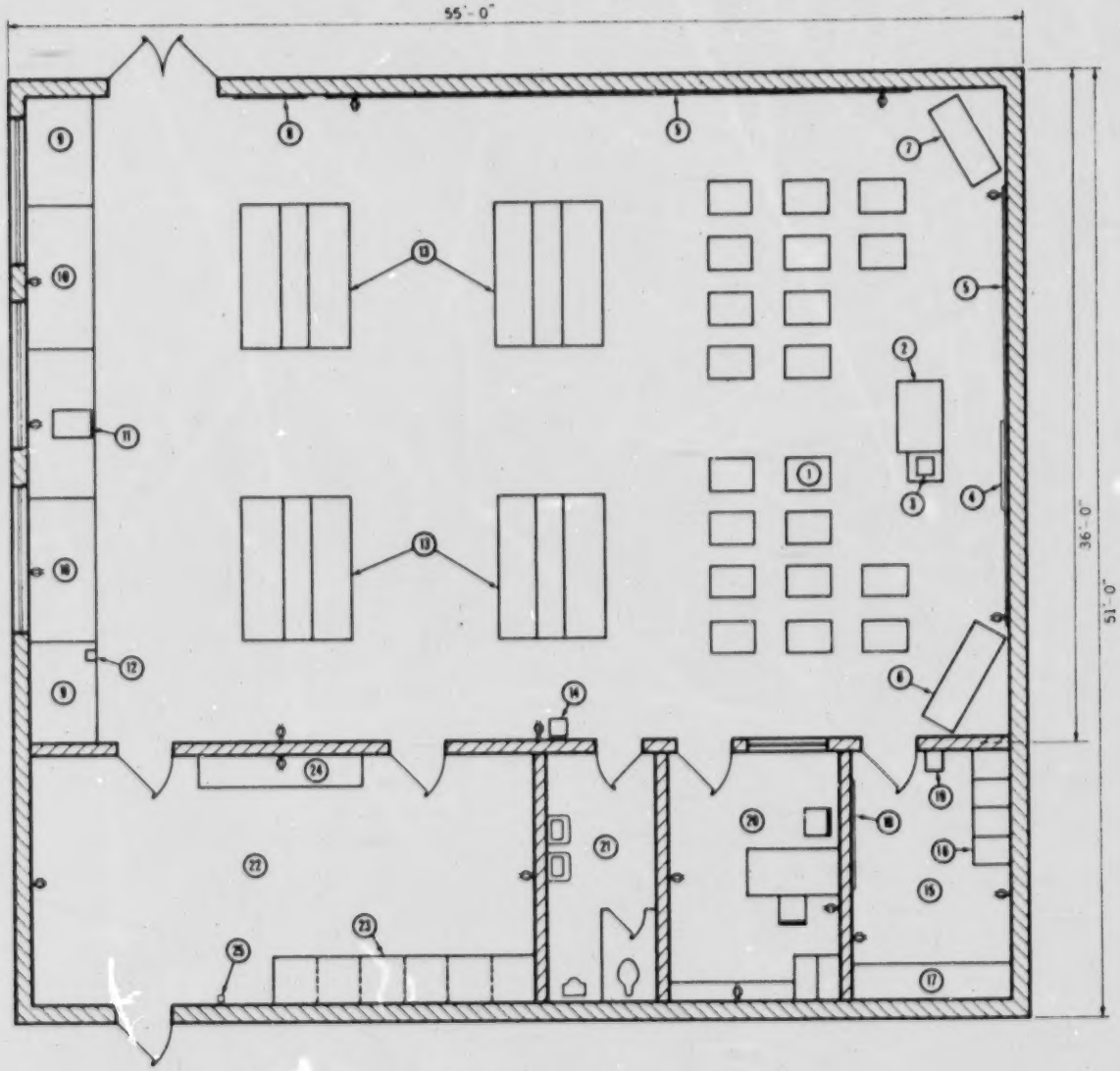
Specialized theory and practice which are concerned with the construction, maintenance, and repair of radios and television sets. Training also prepares students to diagnose troubles and make repairs on other electronic products, such as high-fidelity sound equipment, phonographs, and tape recorders.

LEGEND

Radio and Television Repair

1. Student desks
2. Teacher's desk
3. Overhead projector
4. Pull-down screen
5. Chalkboard
6. Master demonstrator
7. Transitor demonstrator
8. Tack board
9. Work space
10. Work station
11. Drill press
12. Vise
13. Workbench *
14. Water cooler
15. Toolroom — 10' x 15'
16. Service-information files
17. Equipment-storage shelving
18. Tool-storage rack
19. Distribution amplifier (T V signal)
20. Office — 15' x 10'
21. Toilet — 15' x 6' 6"
22. Set-storage room — 29' x 15'
23. Chassis-storage rack (3 tier)
24. Extended-test area
25. Compressed-air outlet

*Flush-mounted floor receptacles located under the benches



RADIO AND TELEVISION SERVICE

SUPPLY LIST

Radio and Television Supplies

Component Parts

Tubes
Semi-conductor diodes
Transistors
RF coils
IF coils
Outlet transformers
Power transformers
Capacitors, paper
Capacitors, ceramic
Capacitors, mica
Capacitors, electrolytic
Capacitors, tuning
Volume controls
Tone controls
Switches
Terminal strips
Tube sockets
Transitor sockets
Transistor heat sinks
AC line plugs
Power cords
Phono cartridges
Phono needles
Dial lamps
Loop antennas
Speakers
Fuses
Filter chokes
Phone jacks
Relays

Wires, Cables, Etc.

Magnet wire
Hookup wire
Shielded hook-up wire
Antenna wire
Lead-in wire
TV lead-in wire, 300 ohms
Coaxial cable
Microphone cable
Test-lead wire
Lamp cord
Electrical tape
Lightning arrestors
Assortment of connectors
Insulator (Stand-offs)

Miscellaneous Parts

Dial cord
Dial-cord dressing
Batteries
Solder
Coil forms
Ferrous cores
Magnets
Drill bits
Speaker cement
Contact cleaner
Magnetic tape
Spaghetti
Miscellaneous hardware with parts cabinets

17.0100 Air Conditioning and Refrigeration

Classroom and shop experiences which enable the student to become proficient in the installation, repair and maintenance of commercial and domestic air-conditioning and refrigeration systems. Included is instruction in the theory and application of basic principles involved in conditioning of air-cooling, heating, filtering, and controlling humidity; the operating characteristics of various units and parts; blueprint reading; the use of technical reference manuals; the diagnosis of malfunctions; the overhaul, repair, and adjustment of units and parts, such as pumps, compressors, valves, springs, and connections; and the repair of electric and pneumatic control systems.

LEGEND

Air Conditioning & Refrigeration

1. Welding machine, electric — min 100-amp input
2. Welding booth, electric
3. Welding cart, oxyacetylene
4. Welding table, oxyacetylene
5. Exhaust hood
6. Half-round sink
7. Grinder, pedestal — min ½-hp
8. Drill press — min 1-hp
9. Press, hydraulic — min 25-ton cap
10. Worktables
11. Refrigerator — 115-v
12. Refrigerator — 115-v
13. Refrigerator — 115-v
14. Refrigerator, absorption-type
15. Classroom — 20' x 30'
16. Teacher's desk
17. Overhead projector
18. Projection screen
19. Chalkboard
20. Fire extinguisher
21. Dressing room — 8' x 21'
22. Toilet — 8' x 9'
23. Storage — 20' x 20'
24. Toolroom — 10' x 10'
25. Office — 10' x 10'
26. Water cooler
27. Worktables
28. Air conditioner — 12,000 BTU, 230-v
29. Air conditioner — 18,000 BTU, 230-v
30. Air conditioner — 3-ton, 230-v
31. Heat pump — 2-ton, 230-v
32. Worktables
33. Dolly
34. Paint room: curtain wall; exhaust fan
35. Cleaning tank: 3' x 3' x 3'
36. Cleaning area
37. Work-storage apron
38. Overhead door — 10' x 10'
39. Condenser: for heat pump (No. 31); 115-v
40. Air compressor — min 3-hp
41. Workbench
42. Pipe rack: overhead

Optional Equipment for Advanced Training

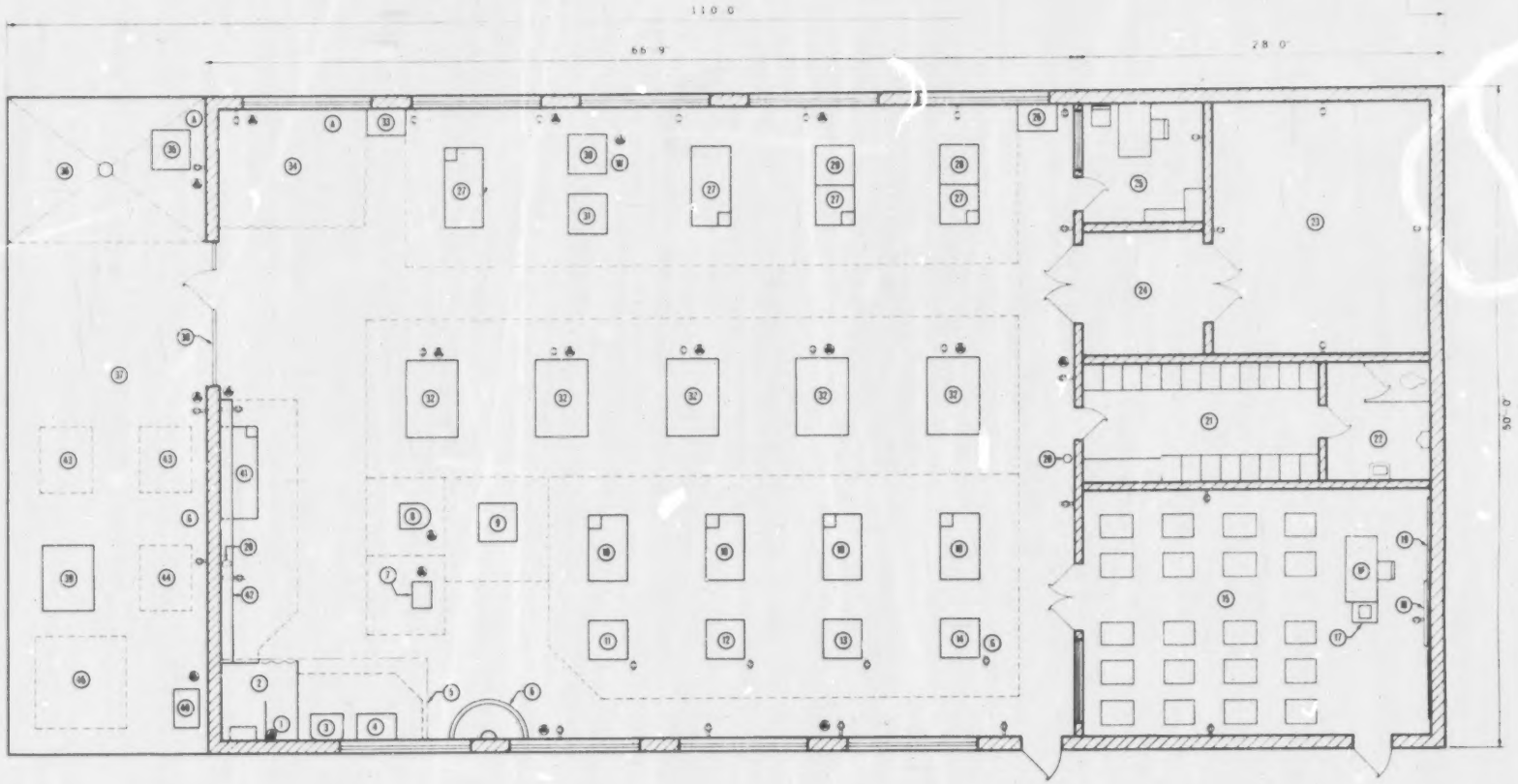
43. Air conditioner, gas unit, absorption-type
44. Condenser: for above
45. Water tower

A Air

G Gas

W Water

▲ 230-volt, 3-phase



AIR CONDITIONING & REFRIGERATIONING

SUPPLY LIST

Air Conditioning & Refrigeration Supplies

Abrasives

Aluminum-oxide cloth:
  100- and 240-grit sheets
Emery cloth: fine, medium,
  and coarse grit sheets
Lapping compound

Adhesives and Sealers

Caulking compound
Duct tape: 2 in., 4 in., 12 in.
Electrical tape: 3/4 in., 1 in.,
  and 1 1/2 in.
Gasket compound
Plastic cement

Cleaning

Brooms
Drop cloth
Floor-cleaning compound
Shop towels

Electrical Control

Air-core cylinder
Batteries, flashlight
Capacitors
Circuit-breaker panels
Coils
Control buttons
Defrost controls
Relays
Resistors
Solenoids
Switches
Timers
Transformers

Electric Motor

Brushes, motor
Capacitor-start motor:
  1/4-hp; a-c
Induction-start motor:
  repulsion start
Polyphase-type motor:
  a-c; 1/3-hp
PSC motor
Split phase-type motor:
  a-c; 1/4-hp

Fasteners

Bolts and nuts: assorted sizes
  and types (for mounting, etc.)
Machine screws: assorted sizes
  and types
Nails: 4d, 8d, 16d common
Staples
Straps, steel

Fittings and Connections

Brass tubing: 1/4 in., 3/8 in.,
  1/2 in., 5/8 in., and 3/4 in.
Brass fittings: for brass tubing
Connections, solderless
Compression fittings
Conduit, rigid: 1/2 in., 3/4 in., 1 in.
Copper fittings for copper tubing
Copper tubing: 1/4 in., 3/8 in., 1/2 in.,
  7/8 in., and 1 in.
Couplings: 1/4 in., 3/8 in., 1/2 in.
  5/8 in.
Elbows: 1/4 in., 3/8 in., 1/2 in.,
  5/8 in.
E.M.T.: 1/2 in., 3/4 in., and 1 in.
E.M.T, connectors: 1/2 in., 3/4 in.,
  and 1 in.

E.M.T. couplings: 1/2 in., 3/4 in., and 1 in.
E.M.T. compression fittings: 1/2 in., 3/4 in., and 1 in.
Flare fittings: 1/2 in., 3/4 in., and 1 in.
Flare nuts: 1/4 in., 3/8 in., 1/2 in., and 5/8 in.
Galvanized fittings: 1/2 in., 3/4 in.
Galvanized pipe: 1/2 in., 3/4 in.
Gasket sets
Identification tags
Liquid moisture indicators
Meter base
Steel fittings
Steel tubing
Sweat fittings
Tap-a-lines: 1/4 in., 3/8 in., 1/2 in., and 5/8 in.
Unions: 1/4 in. to 1/4 in.; 3/8 in. to 1/4 in.; 3/8 in. to 3/8 in.; 1/2 in. to 3/8 in.; 5/8 in. to 1/2 in.; 1/2 in. to 1/2 in.
Unions, half: 1/8 in. pipe to 1/4 in. flare; 1/4 in. pipe to 3/8 in. flare

Refrigerant Gases

Refrigerant 12 and 22
Refrigeration oil: Nos. 150 and 300

Solder

Acid swab
Flux, paste
Muriatic acid
Sal ammoniac
Solder, acid-core: 40/60
Solder, rosin-core: 40/60

Welding

Acetylene
Mild sheet steel: 16 ga. x 4 in. x 6 in.
Oxygen
Pipe: 1 in.
Renewal flints
Welding rods

Wire

Bell wire: 2-wire
Bell wire: 5-wire
Copper wire: No. 16
Entrance cable
Extension cord: 50-ft
Ground cable
Heater wire
Solderless connectors
Terminal kits
Wire
Wire nuts
Wiring diagrams

Miscellaneous

Bar magnets
Charts, Psychrometric
Drum, for ice
Dryers: 1/2-ton to 3-ton
Iron cores

17.2305 Sheet Metal

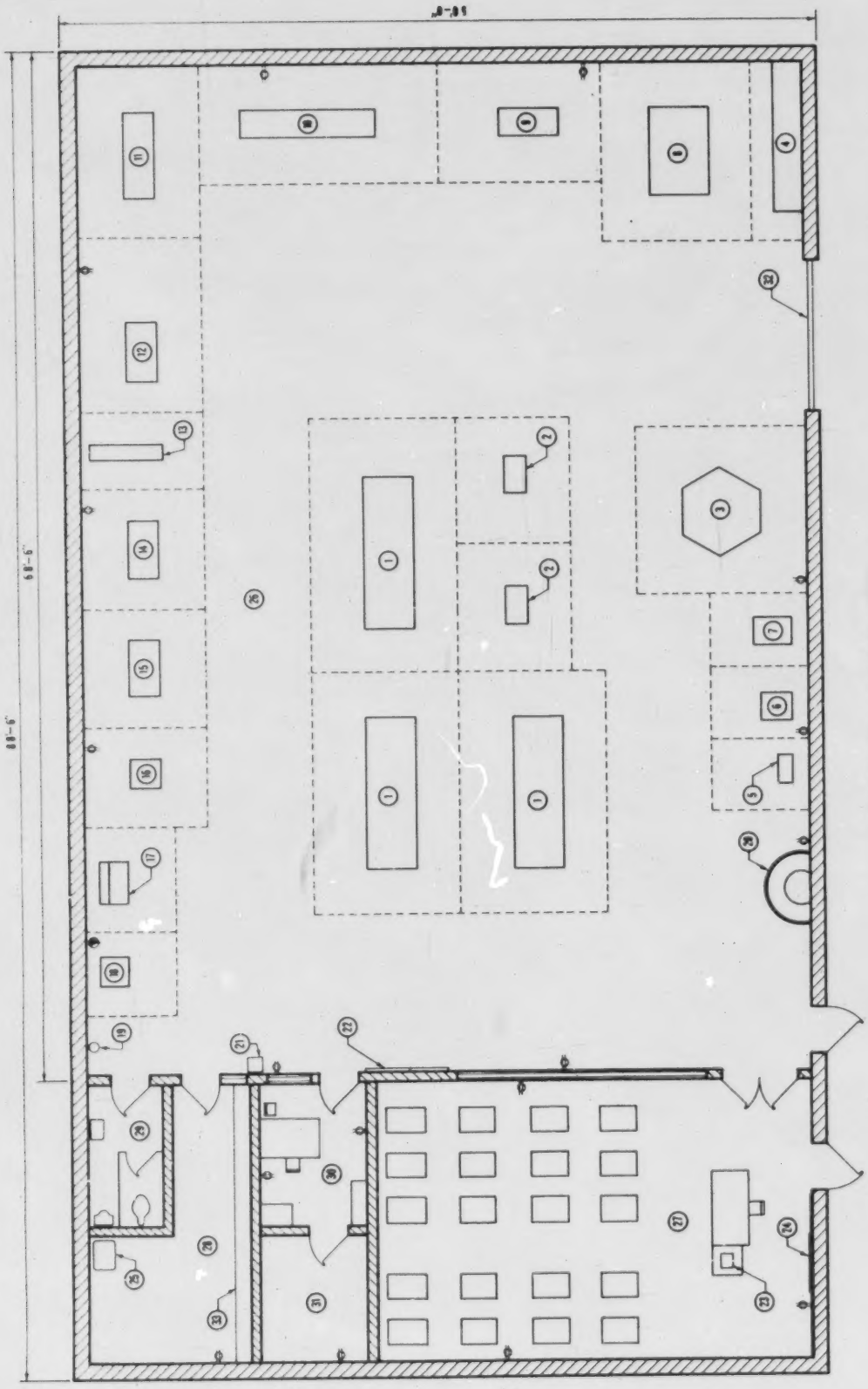
Specialized classroom and shop experiences concerned with the layout, fabrication, erection or installation, and maintenance of items made of steel, copper, stainless steel, and aluminum, such as ventilating, air-conditioning and heating ducts, kitchen equipment, signs, furniture, and skylights. Instruction includes the use of hand tools and machines, such as the cornice brake, forming rolls, and squaring shears; drafting; and blueprint reading.

LEGEND

Sheet Metal

1. Workbenches
2. Stake plates
3. Machine stand
4. Storage rack
5. Grinder — min ½-hp
6. Drill press — min ½-hp
7. Band saw — min ½-hp
8. Squaring-shears
9. Lockforming machine — min ¾-hp
10. 8' Brake
11. 4' Slip rolls
12. 3' Slip rolls
13. Ring- and circle-shears
14. 3' Box- and pan-brake
15. 3' Brake
16. Notching machine
17. Oxyacetylene welding outfit
18. Arc welder, with exhaust hood
19. Fire extinguisher
20. Half-round sink
21. Water cooler
22. Tack board
23. Overhead projector
24. Pull-down screen
25. Air compressor — min 3-hp
26. Open-shop — 68' 6" x 50'
27. Classroom — 20' x 30'
28. Toolroom — 20' x 11' 6"
29. Toilet — 5' 6" x 10' 3"
30. Office — 10' 3" x 8' 3"
31. Instructor's storage — 10' x 9' 9"
32. Overhead door — 10' x 10'
33. Shelving

△ 230-volt,3-phase



SHEET METAL

SUPPLY LIST

Sheet Metal Supplies

Abrasives

Aluminum-oxide cloth: 100- and 240-grit sheet
Emery cloth: fine (No. 70 to 120) sheet-type
Emery cloth: medium (No. 30 to 60) sheet-type
Emery cloth: coarse (No. 12 to 24), sheet-type
Steel wool
Wire brushes

Cleaning

Brooms
Shop rags

Bolts

Bolts: 3/16 in. x 1/2 in.
Bolts: 1/4 in. x 1/2 in.
Bolts: 1/4 in. x 3/4 in.

Iron

Angle iron: 1 in. x 1 in. x 1/8 in., 20-ft. lengths
Angle iron: 1 1/2 in. x 1 1/2 in. x 1/8 in., 20-ft. lengths
Band iron: 1/4 in. x 1 in., 20-ft. lengths
Band iron: 3/16 in. x 1 in.
Band iron: 1/4 in. x 2 in.

Rivets

Rivets, aluminum: 1- to 5-lb sizes
Rivets, copper: 1- to 5-lb sizes
Rivets, galvanized: 1- to 5-lb sizes

Screws

Screws: No. 8 x 1/2 in.
Screws: No. 10 x 3/4 in.

Sheet Metal

Aluminum: No. 0.32, half-hard 3-ft. x 8-ft. sheets
Black iron: 16-gage
Copper: 16-gage
Galvanized: 18-gage; 3-ft. x 8-ft. sheets
Galvanized: 20-gage; 3-ft. x 8-ft. sheets
Galvanized: 22-gage; 3-ft. x 8-ft. sheets
Galvanized: 26-gage; 3-ft. 8-ft. sheets
Galvanized: 30-gage; 3-ft. x 8-ft. sheets
Stainless: 26-gage, type 304, No. 4 finish, 3-ft. x 8-ft. sheets

Soldering

Acid swab
Copper flux
Muriatic acid, industrial
Sal ammoniac
Solder, 50/50
Stainless steel flux

Welding and Brazing

Acetylene
Brazing flux
Brazing rods
Electrodes, arc (manual-metal)
Flints, renewal
Oxygen
Plates, cover: for welding helmet
Plates, filter: 2 in. x 4 1/2 in., for welding helmet
Rods, oxyacetylene welding: medium-carbon, high-strength, stainless
Rods, oxyacetylene welding: mild-steel, copper-coated
Rods, oxyacetylene welding: nonferrous, aluminum, brass, bronze, etc.

17.2306 Welding

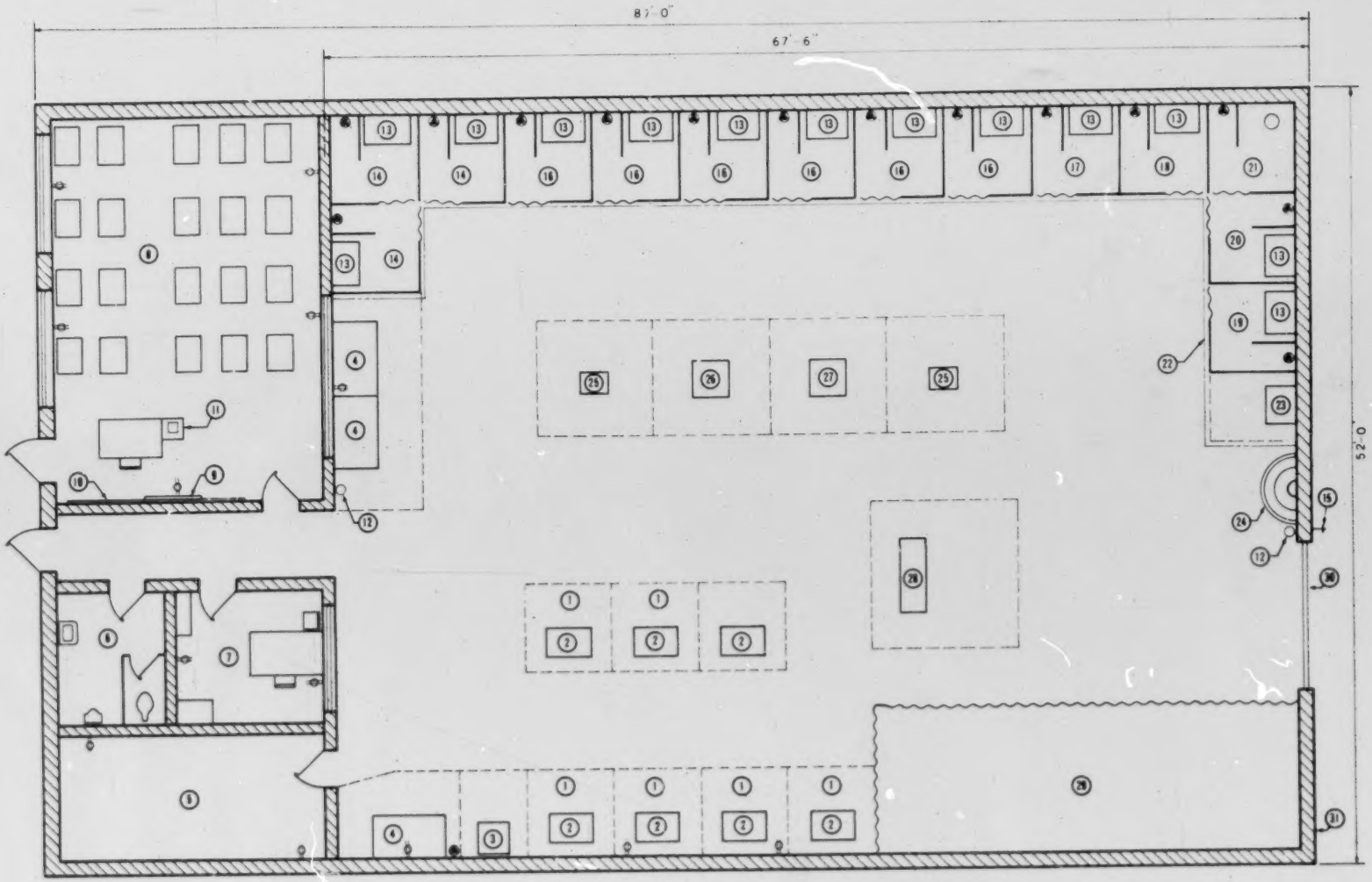
Specialized classroom and shop experiences concerned with all types of metal welding, brazing, and flame cutting. Instruction emphasizes properties of metals, blueprint reading, electrical principles, welding symbols, and mechanical drawing.

LEGEND

Welding

1. Oxyacetylene welding station, with exhaust hood
2. Welding table
3. Cylinder truck
4. Worktable
5. Storage — 10' x 20'
6. Toilet — 9' x 9'
7. Office — 10' x 11'
8. Classroom — 20' x 28'
9. Pull-down screen
10. Chalkboard
11. Overhead projector
12. Fire extinguisher
13. Welding table
14. Welding booth, a-c-type only
15. Frost free hose bib
16. Welding booth — a-c/d-c
17. Welding booth — motor-generator
18. Welding booth — manual-inert gas
19. Welding booth — tungsten-inert gas
20. Welding booth — dip-transfer process
21. Handicap booth
22. Exhaust hood
23. Cooling tank
24. Half-round sink
25. Grinder — min 1-hp
26. Tensile-strength test machine
27. Bend-test machine
28. Automatic-cutting machine
29. Metal storage, curtained
30. Overhead door — 10' x 10'
31. Gas-line inlet

△ 230-volt, 3-phase



COMBINATION WELDING

SUPPLY LIST

Welding Supplies

Abrasives

Aluminum-oxide cloth: 100-grit sheets
Aluminum-oxide cloth: 240-grit sheets
Emery cloth: fine (No. 70 to 120), sheet-type
Emery cloth: medium (No. 30 to 60), sheet-type
Emery cloth: coarse (No. 12 to 24), sheet-type
Steel wool
Wire brushes

Cleaning

Brooms
Towels, shop

Stock

Aluminum plate: 1/8 in.
Aluminum, sheet: .040 in.
Brass: 1/16 in.
Cast iron: 1/4 in.
Cast iron: 1/2 in.
Copper: 1/16 in.
Mild steel: 16-gage
Mild steel: 18-gage
Mild steel: 3/16 in.
Mild steel: 1/2 in.
Stainless steel: 1/16 in.
Steel pipe: 4 in.
Steel pipe: 6 in.
Steel plate: 1/4 in.
Steel plate: 3/8 in.

Welding and Brazing

Acetylene
Argon
Carbon dioxide/argon 75-25 premix
Electrodes, arc (Manual-metal): mild-steel, coated
Electrodes, tungsten: 3/32 - 6 in.; 1/16 - 6 in.
Flints, renewal
Flux, aluminum welding
Flux, brazing: brass
Flux, brazing: cast iron
Flux, brazing: copper
Headbands, replacement: for welding goggles
Lens, cover-replacement: for goggles
Oxygen
Plates, cover: for welding helmets
Plates, filter: 2 in. x 4 1/2 in., for welding helmet
Rods, brazing
Rods, oxyacetylene welding: medium-carbon, high-strength, stainless
Rods, oxyacetylene welding: nonferrous; aluminum, brass, bronze, etc.
Soapstone
Soldering-paste solder, 40/60

ORGANIZATION OF INSTRUCTION

Instructional content of a given program is determined by an analysis of the occupation itself; that is, from the knowledge and skills of the master craftsmen. The instructor calls heavily on his own background. Reinforcing his knowledge is a technical library containing printed and audiovisual materials, such as textbooks, manuals, periodicals, catalogs, bulletins, films, and others. These should be systematically arranged and properly shelved.

Related instruction in scientific principles and their applications is essential for the competent craftsman and is as important as trade practices. This instruction is carefully correlated with skill-building activities to promote maximum transfer and reinforcement of learning. Group instruction and group shop activity are encouraged when space and equipment are available; however, the backbone of trade and industrial training is the instructor's ability to simultaneously direct the activities of individuals and small groups. The most common teaching practices involve demonstrations, directed readings, and individual work-training assignments in which the trainee follows a job sheet. Safe working practices are constantly emphasized and violations are tactfully, but firmly, corrected.

The law requires that trainees have a vocational commitment as a matter of record. They are expected to have the desire, need, and ability to profit from the training. Their qualifications are evaluated through a vocational-guidance process which includes a variety of methods, such as an examination of the applicant's school record, a personal interview, a check of references, and tests for interests, motivations, and learning rates.

The major time investment is in the trainees' application of learning. Each is assigned a useful and productive task, or job, which is typical of the occupation. He uses tools, equipment, methods, and materials common the the occupation. At predetermined intervals, an evaluation of the trainee's progress checks his command of knowledge and skills. Identified deficiencies are retaught through additional individual instruction until an acceptable level of training and performance is reached.

The length of training is normally 1080 hours. Two plans are presently being used; three consecutive clock hours per day for 180 days per year for two years, or six clock hours per day for 180 school days for one year. It is important to note that the emphasis is on individual progress and individual proficiency, not on the length of training time. (For complete information on facilities in Trade and Industrial Education, see **Planning and Equipping School Shops for Trade and Industrial Education.** Mississippi State, Mississippi: Curriculum Coordinating Unit, 1969.

YOUTH ACTIVITIES

Opportunities are frequently provided both during and outside regular class time for pupils to develop interests, skills, and knowledge in selected aspects of trade and industrial occupations as an integral part of the instructional program. As an example, the Vocational and Industrial Clubs of America provide additional opportunities to develop leadership, civic responsibilities, and other qualities, and an understanding of the world of work in trade and industrial occupations. Such organized activities, under appropriate supervision, are referred to as cocurricular activities. They may be designed for participation of pupils as individuals or in groups.

CLASS ENROLLMENT

Class size — the general recommendation on class size is 10 to 20, with 15 considered optimum. Enrolling fewer than 10 trainees is uneconomical; more than 20 creates an overload which will not permit quality instruction and adequate supervision.

VII. COOPERATIVE VOCATIONAL EDUCATION

Cooperative Vocational Education programs are designed to prepare students for entry occupations and for promotion to positions of increased responsibility. Programs are developed jointly by the school and business or industry in which job skills and employability skills are secured through an organized sequence of job experiences, for which the student is paid, and through classroom experiences in related instruction. The in-school phase involves instruction in both general information (indirectly related) common to all vocations and related information or theory (directly related) which is applicable to the occcupation in which the student is being trained. The on-the-job training phase is insured by a written memorandum of training plan developed jointly by the local coordinator (school representative) and the employer. School attendance and on-the-job training may be on alternate half days, full days, weeks, or other periods of time in fulfilling the requirements of the cooperative vocational education program.

The primary objectives of cooperative vocational education are to help the student to:

1. Learn skills of an occupation under actual conditions of employment.

2. Gain technical and related information which will enable the learner to engage in the work of the chosen occupation intelligently, safely and confidentially.

3. Make adjustment to the real employment setting, including responsibilities, relations with other employees, and acceptance of supervision.

4. Make optimal application of school learning to a vocation and of job learning to school work.

5. Learn to assume adult responsibility in work, in relation to peers and in his community.

TYPES OF COOPERATIVE VOCATIONAL EDUCATION PROGRAMS

1. Cooperative programs in agriculture

Cooperative agriculture programs provide classroom instruction and on-the-job training to develop vocational competency in occupations relating to agriculture. For a more complete discussion of the instructional program, a supplies list, and floor plans, see Agricultural Education (OE 01.01 - 01.99) in this publication.

2. Cooperative programs in business and office education

Cooperative office programs provide classroom instruction and on-the-job training to develop vocational competency in office skills, knowledge, and understanding. For a more complete discussion of the instructional program, a supplies list, and floor plans, see Business and Office Occupations (OE 14.00 - 14.99) in this publication.

3. Cooperative programs in distributive education

Cooperative programs in distributive education provide classroom instruction and on-the-job training in the various areas of marketing, including wholesaling and retailing. For a more complete discussion of the instructional program, a supplies list, and floor plans, see Distributive Education (OE 04.00 - 04.99) in this publication.

4. Cooperative programs in home economics education

Cooperative programs in home economics education provide classroom instruction and on-the-job training to prepare students for specific occupations requiring the technical skills of home economics. For a more complete discussion of the instructional program, a supplies list, and floor plans, see Home Economics (OE 09.01 - 09.0299) in this publication.

5. Cooperative programs in trade and industrial education

Cooperative programs in trade and industrial education provide classroom instruction and on-the-job training in the skilled trades or other skilled industrial occupations. For a more complete discussion of the instructional program, a supplies list, and floor plans, see Trade and Industrial Education (OE 17.00 - 17.99) in this publication.

6. Cooperative programs in diversified occupations

Cooperative programs in diversified occupations (often referred to as general co-op or across-the-board co-op) provide classroom instruction and on-the-job training in any vocational field, including business and office, trade and industrial, distributive, agriculture, home economics, and health occupations. These programs are designed primarily for those areas that cannot justify the above mentioned specialized cooperative programs.

MINIMUM SUPPLIES LIST

Study Guides and the compatible reference materials must be supplied for each student enrolled in cooperative vocational education. A set of 15 reference books for use in the generally related instructional phase of the cooperative program must also be provided. All of these materials may be secured from the Curriculum Coordinating Unit, Mississippi State University on an annual loan basis. Funds for these materials are made available to the Curriculum Coordinating Unit through the State Department of Education, Vocational Division. The arrangement is contingent annually upon the availability of funds.

MINIMUM EQUIPMENT LIST

Item Number	Quantity	Description
1*	7	Tables, top 72" x 30" height, 30" top faced with wood grain plastic
2*	16	Chairs 17" or 18" with glides
3*	1	Filing cabinet, 4 drawer letter, 52" high, 28" deep with lock
4**	1	Library shelving, 3 sections with back panels, each section 36" wide, 82" high, 12" deep 2 sections to include 6 adjustable shelves and 1 fixed bottom shelf; 1 magazine section to include 5 sloping adjustable, 4 flat adjustable and 1 fixed bottom shelf
5	1	Teacher's desk
6	1	Teacher's chair

*These items will be reimbursed by the State Department of Education, Vocational Division, provided funds are available.

**Necessary only for existing facility. This should be built-in, new facility.

LEGEND

A Door 2' 6"

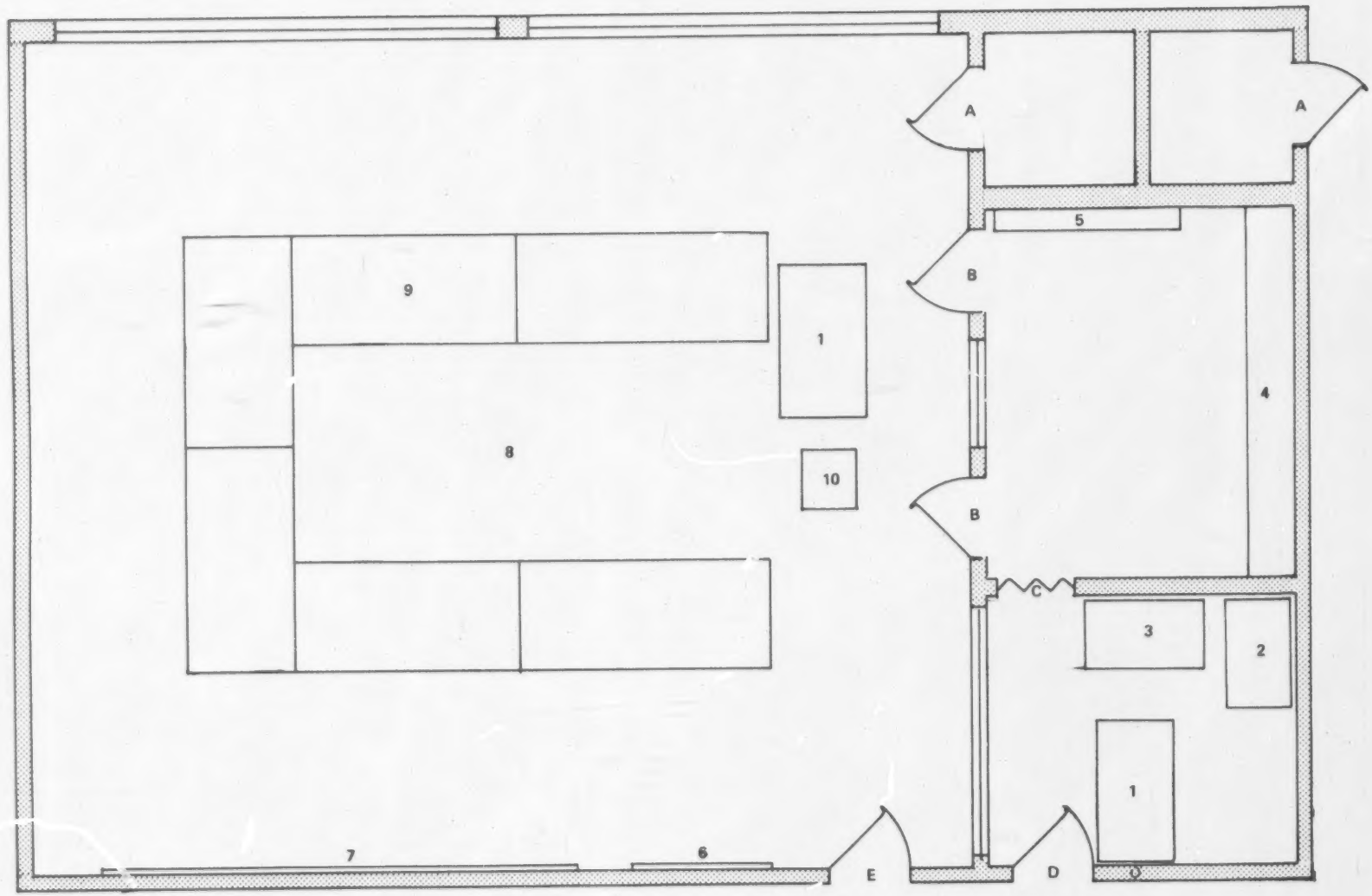
B Door 2'4"

C Accordion Dr. 2'6"

D Door 2'6"

E Door 3'0"

1. Desk
2. File Cabinet
3. Table & Chair
4. Notebk. & Ref. Stg.
5. Periodical Rack
6. Bulletin Board
7. Chalkboard
8. Chair
9. Study Tables
10. Lectern



COOPERATIVE EDUCATION

VIII. INDUSTRIAL ARTS

Industrial arts is a program which teaches the basic concepts of industry and technology to students at all levels. Manipulative type activities are utilized to help the student understand and appreciate the technological culture in which he lives. Through hands-on experiences he is able to discover, develop and realize his mental and physical capabilities. By using the tools of industry in the creation and expression of ideas in laboratory-classroom, the student gains an insight of the role of industry and technology in our society.

PURPOSE

Industrial arts develops basic skills and knowledge common to many occupations and professions. It provides the opportunity for meaningful application of the theoretical principles of science, mathematics, and other related subjects. It also develops an awareness of and appreciation for the tools, materials and processes of past and present methods of production.

One of the major goals of industrial arts is to give students a broad range of knowledge of industry which will prepare them for training on the job by the industry or in a vocational training program.

OBJECTIVES

The major purposes of industrial arts are:

1. To develop an insight and understanding of industry and its place in our culture.
2. To discover and develop talents, aptitudes, interests, and potentialities of individuals for the technical pursuits and applied sciences.
3. To develop an understanding of industrial processes and the practical application of scientific principles.
4. To develop basic skills in the proper use of common industrial tools, machines, and processes.
5. To develop problem-solving and creative abilities involving the materials, processes, and products of industry.

OBJECTIVES OF INDUSTRIAL ARTS BY OPERATIONAL LEVELS

Industrial Arts in the Elementary School (Grades K-6)

Industrial arts experiences in the elementary grades are closely correlated with the basic units of the elementary schools so that the results will provide an integrated program of education. Through the use of easy to form materials, the students have an opportunity to express themselves creatively in the construction of two and three dimensional objects. From such endeavors, they not only benefit from the pleasure of working with materials, but also from the many opportunities for self-expression and self-discovery. In addition, considerable insight and interest are developed in manipulative activities which parallel those in their parents' "world of work."

The specific objectives of industrial arts in elementary school are:

1. To support, enrich, and vitalize the academic curriculum and make general educational experiences more meaningful to the students.

2. To develop cooperative attitudes and self-reliance through problem-solving situations.

3. To develop an understanding and appreciation of the dignity of honest work.

Usually the students work in the classroom under the direction of the elementary teacher; however, some schools provide a special room for individual and group projects. As a supplement to the regularly assigned teacher, specially trained consultants or resource teachers are employed to assist and direct teachers and pupils alike.

Since the curriculum in the elementary school is on child growth and development, industrial arts at this level should be an integral part of all subject areas and should be considered perhaps as a method rather than a separate subject viewed in its own entity.

Industrial Arts in the Junior High School (Grades 7-9)

The junior high school industrial arts program is the most diversified of all and offers youth a variety of experiences in organized laboratories. Under the direction of specialized teachers, the students are provided with basic exploratory experiences in using many of the tools, materials, processes, and products of the major industries. Through experiences in drafting, woodworking, metalworking, industrial crafts, graphic arts, electricity-electronics, and power areas, the students can develop an appreciation of industrial design, good craftsmanship, safe work habits, orderly procedures, and an understanding of common tools, machines, and devices.

The specific objectives of industrial arts in the junior high school are:

1. To provide all students with the opportunity to explore industry and the world of work.

2. To provide opportunities for attaining knowledge of industrial vocations and related avocational pursuits and hobbies.

3. To provide consumer knowledge in regard to the choosing, buying, and using goods and services of industry.

The exploratory experiences with materials and broad exposure to basic fundamentals of industry and technology constitute the primary aspects of the industrial program at the junior high school level. The program includes opportunity for all youth in planning, experimenting, and working in the major activities of industrial arts. Opportunities to study the underlying functions of industry and to explore their interrelations are all part of the total program.

As a result, the student can assess and understand his interests, abilities, limitations, and potentialities in our industrial society. From this type of a general education program, guidance for all youth can be provided on both educational and prospective occupational levels.

Industrial Arts in the Comprehensive High School (Grade 10-12)

Industrial arts at the high school level contributes to the total school educational program by interpreting the functions, technology, and occupational opportunities in modern industry. Industrial arts provides the student with opportunities to study about industries, materials used in industry, fabrication procedures, methods of communication, energy and propulsion, and personal services as they relate to the industrial and consumer use of finished products. Students see and experience the unity or wholeness of modern industry.

The specific objectives of industrial arts in high school are:

1. To provide adequately for basic instruction to meet the needs of at least three types of students: (a) students planning to explore more deeply the avocational cultural understanding and consumer aspects of American industry, (b) students planning to pursue advanced study and careers in the areas, such as the applied and technical sciences, and (c) those who will be entering the labor force before graduation or immediately after.

2. To provide practical situations dealing with the industrial world of work and to provide understanding of the competitive nature of industry and business.

3. To provide basic skills which are useful in a variety of occupations or for occupational adjustment.

Industrial Arts at the Post-Secondary Level

Industrial arts in the junior college contributes to liberal education and technical competencies of students. Technical courses contribute to a sound base for those interested in industrial education. Adult needs are met through a wide variety of service courses.

The primary function of industrial arts in the university is the preparation of industrial arts teachers. The curriculum is divided into two areas — courses related to development of skills and technical knowhow, and courses in the professional area.

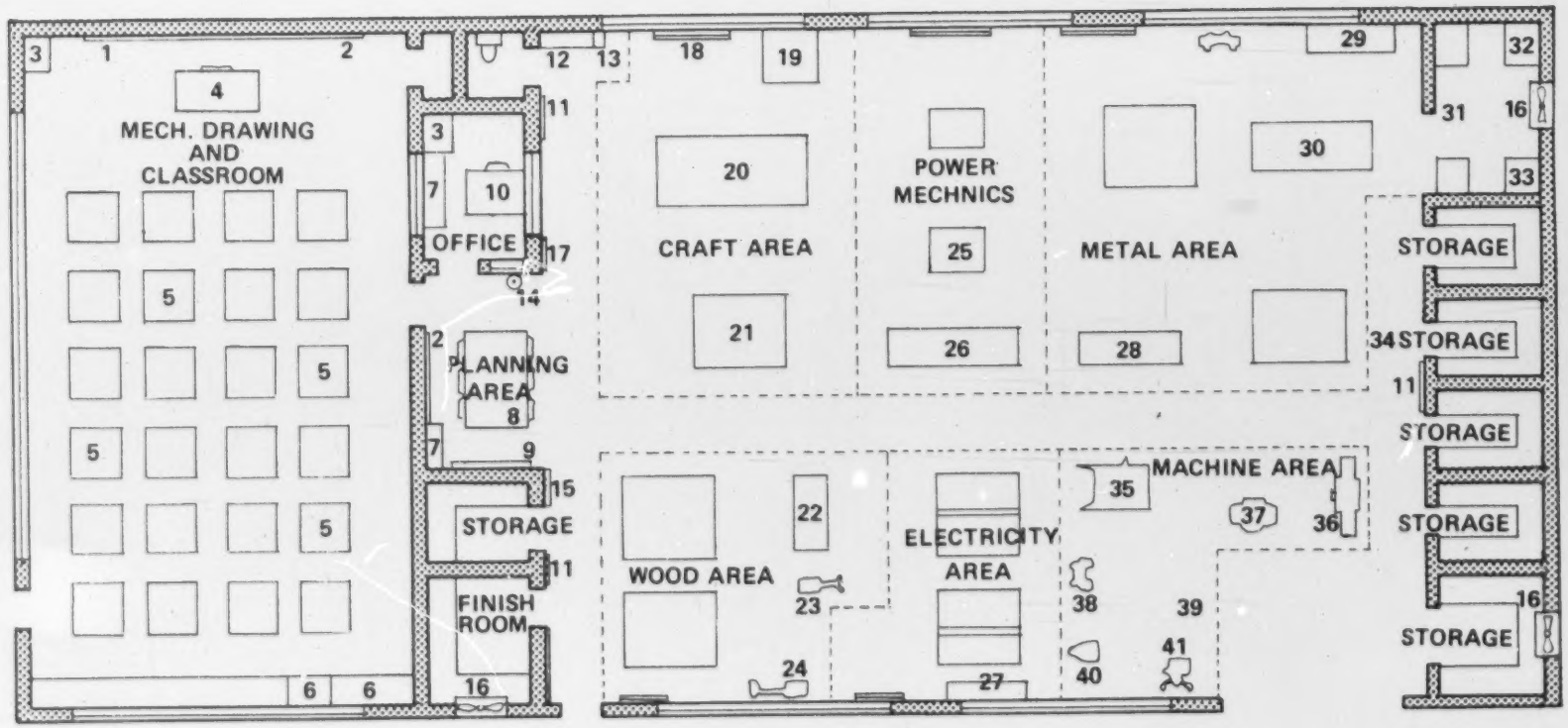
ORGANIZATION OF INSTRUCTION IN INDUSTRIAL ARTS

The industrial arts program at the senior high school level should be articulated horizontally and vertically. The horizontal curriculum approach enables the student to explore further additional kinds of work in which he is interested or which are suited to his objectives. The vertical curriculum approach offers the student an opportunity to concentrate and specialize in a selected field of industrial work. The horizontal approach provides the student with a broad, general background. The vertical approach provides pre-employment experiences. Regardless of which route the student may select, numerous opportunities are provided for experimentation, problem solving, the application of scientific principles, and the integration of physical, chemical, and electrical forces dealing with materials and processes of industry. The industrial arts program should challenge the superior student, provide constructive experiences for the average student, and encourage the slower and less able student.

The industrial arts teacher should have the professional background and practical experiences which qualify him to offer guidance and counseling to industrially-oriented students.

LEGEND

1. Chalkboard
2. Bulletin board
3. File cabinet
4. Instructor's drawing table and chair
5. Student's drawing table and stool
6. Storage cabinets
7. Bookcase
8. Planning table
9. Magazine rack
10. Office desk
11. Ladder
12. Wash sink
13. Drinking fountain
14. Fire extinguisher
15. First aid
16. Ventilation fan
17. Power control panel
18. Tool panel
19. Kiln
20. Craft bench
21. Workbench
22. Glue bench
23. Scroll saw 24"
24. Wood lathe 12"
25. Workbench
26. Power mechanics bench
27. Electrical test bench
28. Metal lathe 10"
29. Soldering bench
30. Stake bench
31. Welding bench
32. Welding machine 225 amp.
33. Oxygenacetylene welding outfit
34. Project storage
35. Table saw 10"
36. Jointer 8"
37. Planner 18"
38. Grinder 7"
39. Comb. belt and disc sander
40. Drill press 15"
41. Band saw 14"



INDUSTRIAL ARTS COMPOSITE SHOP

CONSUMABLE SUPPLIES

Woods

ALL LUMBER S2S to 1 1/8", 6" and wider, 6' and longer.

DESCRIPTION	UNIT	QUANTITY	QUANTITY NEEDED	TOTAL COST
Ash	42.00	100 bd. ft.	_____	_____
Birch	55.00	100 bd. ft.	_____	_____
Aromatic Red Cedar	37.00	100 bd. ft.	_____	_____
Cherry	56.00	100 bd. ft.	_____	_____
Genuine Mahogany	69.00	100 bd. ft.	_____	_____
Hard Maple	47.00	100 bd. ft.	_____	_____
White Oak	45.00	100 bd. ft.	_____	_____
Antique White Pine	31.00	100 bd. ft.	_____	_____
Redwood	46.00	100 bd. ft.	_____	_____
American Black Walnut	87.00	100 bd. ft.	_____	_____
Plywood, Douglas Fir, G2S, 1/4", 3 ply, interior	8.00	1 sheet	_____	_____
Plywood, Douglas Fir G2S, 1/2", 5 ply, interior	11.52	1 sheet	_____	_____

DESCRIPTION		UNIT	QUANTITY	QUANTITY NEEDED	TOTAL COST
Dowel Rods, Birch:	1/8"	1.85	100		
	3/16"	2.55	100		
	1/4"	3.20	100		
	5/16"	4.10	100		
	3/8"	5.30	100		
	7/16"	6.40	100		
	1/2"	9.05	100		
	5/8"	11.50	100		
	3/4"	17.60	100		
	7/8"	23.00	100		
	1"	30.00	100		
Garnet Cabinet Paper, 9" 11" shts. 2/0		77.20	1000 sheets		
Flint Paper, 9" x 11". Sizes:	Fine	21.30	1000 sheets		
	Medium	24.10	1000 sheets		
Steel Wool, 00 Pads, 16 pads per bundle		.84	1 pkg.		

DESCRIPTION		UNIT	QUANTITY	QUANTITY NEEDED	TOTAL COST
Masking Tape, 3/4", 60 yd. roll		1.00	1 roll		
Polyvinyl Resin Glue		5.25	1 gal.		
Casein Glue		3.94	5 lbs.		
Turpentine (spirits)		2.70	1 gal.		
Denatured Alcohol		2.70	1 gal.		
Naphtha		1.80	1 gal.		
White Shellac		4.30	1 gal.		
Lacquer, Brushing		4.50	1 gal.		
Lacquer Thinner		2.85	1 gal.		
Shellac Sticks, assorted colors		3.35	1 doz.		
Stain oil, assortment of colors		1.68	1 qt.		
Varnish, Cabinet Brushing		4.05	1 gal.		
Rubbing and Polishing Compound		4.50	1 gal.		
Varnish Brushes, pure bristle 2"		6.00	1 doz.		
Wood Screw, flat head length	1/4"	.62	1 gr.		
	3/8"	.62	1 gr.		
	1/2"	.64	1 gr.		
	5/8"	.70	1 gr.		

DESCRIPTION		UNIT	QUANTITY	QUANTITY NEEDED	TOTAL COST
	3/4"	.76	1 gr.		
	7/8"	.82	1 gr.		
	1"	.88	1 gr.		
	1 1/4"	1.08	1 gr.		
	1 1/2"	1.34	1 gr.		
	1 3/4"	1.62	1 gr.		
	2"	1.80	1 gr.		
	2 1/4"	2.28	1 gr.		
	2 1/2"	2.40	1 gr.		
	3"	3.18	1 gr.		
	3 1/2"	4.42	1 gr.		
Wood Screw, round head.					
Length:	1/4"	.62	1 gr.		
	3/8"	.62	1 gr.		
	1/2"	.64	1 gr.		
	5/8"	.70	1 gr.		
	3/4"	.76	1 gr.		

DESCRIPTION		UNIT	QUANTITY	QUANTITY NEEDED	TOTAL COST
	7/8"	.82	1 gr.		
	1"	.88	1 gr.		
	1 1/4"	1.08	1 gr.		
	1 1/2"	1.34	1 gr.		
	1 3/4"	1.62	1 gr.		
	2"	1.80	1 gr.		
	2 1/4"	2.28	1 gr.		
	2 1/2"	2.40	1 gr.		
	3"	3.18	1 gr.		
	3 1/2"	4.42	1 gr.		
Corrugated Fasteners, Sizes:	1/4 x 4	.40	200		
	3/8 x 4	.48	200		
	3/8 x 5	.62	200		
	1/2 x 5	.70	200		

DESCRIPTION		UNIT	QUANTITY	QUANTITY NEEDED	TOTAL COST
Miter Joint Fastener		2.00	200		
Common Wire Nails, Sizes:	2 d	1.30	5 lbs.		
	3 d	1.30	5 lbs.		
	4 d	1.30	5 lbs.		
	5 d	1.30	5lbs.		
	6 d	1.30	5 lbs.		
	7 d	1.30	5 lbs.		
	8 d	1.30	5 lbs.		
	10 d	1.30	5 lbs.		
	12 d	1.30	5 lbs.		
	16 d	1.30	5 lbs.		
	20 d	1.30	5 lbs.		
Finishing Nails, Sizes:	3 d	1.50	5 lbs.		
	4 d	1.50	5 lbs.		
	6 d	1.50	5 lbs.		
	8 d	1.50	5 lbs.		
	10 d	1.50	5 lbs.		

DESCRIPTION		UNIT	QUANTITY	QUANTITY NEEDED	TOTAL COST
Box Nails, Sizes:	3 d	1.50	5 lbs.		
	4 d	1.50	5 lbs.		
	6 d	1.50	5 lbs.		
	8 d	1.50	5 lbs.		
	10 d	1.50	5 lbs.		
Wire Brads, Sizes:	3/8"	1.13	1 lb.		
	1/2"	.98	1 lb.		
	5/8"	.84	1 lb.		
	3/4"	.77	1 lb.		
	7/8"	.63	1 lb.		
	1"	.51	1 lb.		
	1 1/4"	.46	1 lb.		
	1 1/2"	.45	1 lb.		
	1 3/4"	.40	1 lb.		
	2"	.38	1 lb.		
	2 1/2"	.36	1 lb.		

Metal Supplies

DESCRIPTION	ESTIMATED COST	QUANTITY	TOTAL COST
Aluminum Flat Sheets, 24" x 72", 22 ga.	6.00 sheet		
Galvanized Steel Sheets, 36" x 96", 24 ga.	5.25 sheet		
Soft Copper Sheets, in rolls, 12" wide, 16 oz.	94.00 (50')		
Soft Brass Sheets, in rolls, 12" wide, 16 oz.	168.00 (50')		
Perforated Steel Sheets, assorted patterns, 36" x 96", 20 ga.	13.20 sheet		
Aluminum Solder, flux core, 1 lb. spool	4.25		
Sal Ammonia Brick, 1 lb. blocks	.75		
Resin Core Solder, 40/60, 3/31" dia., 1 lb. spool	1.87		
Escutcheon Pins 1/2", No. 20	1.40 (1/4 lb.)		
Aluminum Rivets, flat head, 1/8" x 1/4"	4.50 (1/2 lb.)		
Cold Rolled Band Iron, 1/8" x 3/4"	8.00 (100')		
Cold Rolled Band Iron, 1/8" x 1/2"	5.42		
Octagon Tool Steel, 5/8"	3.21		
Round Iron, 1" dia.	55.02		
Square Iron, 3/4" sq.	40.89		

DESCRIPTION	ESTIMATED COST	QUANTITY	TOTAL COST
Square Iron, 1/2" sq.	18.00		
Seamless Brass Tubing, 20 ga. walls, 12 ft. lengths, 1/4" dia.	.22		
Composition Kit: Emery, Tripoli, Stainless, Rouge Composition and Jewelry Rouge	2.00		
Steel Washers, assorted sizes: 3/16" — 9/16"	2.00		
Galvanized Steel Sheets: 36" x 96" 28 ga.	3.75		
36" x 96" 20 ga.	7.20		
Assorted Sheet Metal Screws, sizes: 4 x 1/4", 14 x 1"	4.00 box		
Cotter Pins, assorted sizes: 1/16" x 1/2", 1/4" x 2"	1.30 box		
Stove Bolts, assorted sizes: 5/32" x 1/2", 1/4" x 2"	1.30 box		
Stove Bolts, assorted sizes: 3/16" x 1/2", 1/4" x 2"	2.45 box		
Rivets, round head, 1/8" dia. 1/4"	1.54 (1000)		
3/8"	1.66 (1000)		
1/2"	1.76 (1000)		
3/4"	2.42 (1000)		
1"	2.76 (1000)		

DESCRIPTION		ESTIMATED COST	QUANTITY	TOTAL COST
Rivets, flat head, 3/16" dia.	1/4"	2.42 (1000)		
	3/8"	2.76 (1000)		
	1/2"	3.08 (1000)		
	5/8"	3.42 (1000)		
	3/4"	3.74 (1000)		
	7/8"	4.08 (1000)		
Tinner's Rivets	1 lb.	1.36 (1000)		
	1 1/2 lbs.	1.70 (1000)		
	2 lbs.	1.70 (1000)		
	2 1/2 lbs.	1.86 (1000)		
Blades, jewelers saw, 5"		.50 doz.		
Blades, hacksaw, 12"	18T (doz.)	6.50		
	24T (doz.)	6.50		
File Card		.50		

Mechanical Drawings

DESCRIPTION	ESTIMATED COST	QUANTITY	TOTAL COST
4H Drawing Pencil, Venus or equal	2.05 doz.		
2H Drawing Pencil, Venus or equal	2.05 doz.		
H Drawing Pencil, Venus or equal	2.05 doz.		
F Drawing Pencil, Venus or equal	2.05 doz.		
HB Drawing Pencil, Venus or equal	2.05 doz.		
Dry Cleaning Pad, Garretts or equal	7.80 doz.		
Drafting Tape, Scotch or equal, 3/4" — 10 yd. roll	.50		
Pencil Pointer Pad, Post or equal	.10		
Black Drawing Ink, Higgens or equal	.50		
Art Gum Erasers, 1" x 1" x 1"	.50 doz.		
Pink Pearl Eraser, large size	1.50 doz.		
Tracing Paper, Mechanical Drawing, quality 12" x 18", #43, Brodhead-Garrett	10.00 ream		
White Mechanical Drawing Paper, 12" x 18", #40, Brodhead-Garrett or equal	12.00 ream		

DESCRIPTION	ESTIMATED COST	QUANTITY	TOTAL COST
Pale Green Acadia Mechanical Drawing Paper, 12" x 18", No.50, Brodhead-Garrett	14.00 ream		
4H Refill Drawing Leads	1.00 doz.		
2H Refill Drawing Leads	1.00 doz.		
H Refill Drawing Leads	1.00 doz.		
F Refill Drawing Leads	1.00 doz.		
HB Refill Drawing Leads	1.00 doz		
Basic Electricity — Electronics Supplies *			
Nichrome Resistance Wire, No. 20	4.12 (200 ft.)		
Annunciator Wire, 8 lb. coil	15.80		
Parallel Lamp Cord, No. 18 rubber	13.60 (500 ft)		
Plastic Electrical Tape, 20 ft. rolls	6.60 doz.		
Continuous Thread Pipe, brass 1/8", pipe 3/8", O. S. dia.	1.60 (1 ft.)		

*Because of the nature of electrical projects, it is difficult to predetermine electrical supply needs. If experimentation is to be supplemented with projects, necessary components may be obtained quickly from reputable suppliers, such as:

1. Local electronics supply houses
2. Allied Electronics, 100 N. Western Avenue, Chicago, Illinois 60680
3. Burstein-Applebee, 3199 Mercier Street, Kansas City, Mo. 64111

DESCRIPTION		ESTIMATED COST	QUANTITY	TOTAL COST
Resin Core Solder, 1 lb. spool, 40/60, 3/32 dia.		1.57		
Assorted Hookup Wire Kit		.75 spl.		
Heater Cord, No. 18 ga. insulated with rubber and asbestos		8.40 (100 ft.)		
Round Magnet Wire, plain enamel, 10 spl.	18 ga.	15.80 spl.		
	22 ga.	16.95 spl.		
Solderless Connectors, spring type		.38 doz.		
Fahnesstock Clip, largest wire 10 ga.		.38 (100)		
Alligator Clips		6.40 (100)		
Rubber Handle Caps		8.00 (100)		
Veco Solderless Terminals, assorted.		10.00 (360)		

Basic Leather Supplies

DESCRIPTION		ESTIMATED COST	QUANTITY	TOTAL COST
Segma Fasteners (1 gr. ea.)				
14 line assorted		2.25		
14 line nickel		2.25		
16 line assorted		2.25		
16 line nickel		2.25		
Permanent Fastener (200 ea.)				
small rivet		2.20		
medium rivet		2.20		
large rivet		2.20		
Grommet, size 0 - 1/4"	(200 ea.)	.80		
1 - 5/16"		1.00		
Eyelets, medium	(200 ea.)	.70		
large		1.00		
Key Frame, 6 hook	(1 gr.)	8.20		
4 hook		7.00		
2 hook		9.80		

DESCRIPTION	ESTIMATED COST	QUANTITY	TOTAL COST
Neat-Lac	4.00 gal.		
Neat-Lac Thinner	.90 gal.		
Sponges	1.00 doz.		
Hi-Liter Dye Kit	3.50		
Clear Rubber Cement	2.00 gal.		
Cement Container	1.40		
Belt Craftaids (assorted)	3.00		
Alphabet Craftaids (assorted)	3.00		
Wallet Craftaids (assorted)	3.00		
Key Case Craftaids (assorted)	1.50		
Spools, calf lace, assorted colors, 3/32", 50 ft. spools	3.00		
Spools, calf lace, 1 black, 1 brown, 1/8", 50 ft. spools	4.00 each		
Natural Imported Calf, #2	3.25 skin		
Top Calf, 3-3 1/2 oz. Grade B	18.00 skin		
Carving Cowhide, Grade A, 8-9 oz. back	22.50 skin		
Lacing Needles, two prong	4.00 gross		
Screw Post	2.25 per 100		

DESCRIPTION	ESTIMATED COST	QUANTITY	TOTAL COST
Bird Cage Snap Fastener, line 18	6.00 per gross		
Segma Snap Fastener, line 16	2.25 gross		
Rapid Rivets	1.60 per 100		
Neats Oil	.85 qt.		
Saddle Soap	.80		
Metal Craft Supplies			
Copper Foil, 16", 36 ga.	21.95		
Aluminum Foil, 12", 36 ga.	5.50		
Aluminum Circles, 16", 16 ga.	1.15		
Aluminum Circles, 20", 14 ga.	2.25		
Liver of Sulfur	1.20 lb.		
Clear Metal Lacquer	1.65 qt.		
Flat Black Enamel	1.85 qt.		
Asphaltum Varnish	1.20 qt.		

DESCRIPTION		ESTIMATED COST	QUANTITY	TOTAL COST
Aluminum Etching Compound		1.00 lb.		
All Metal Etching Mordant		.80 lb.		
Orange Transfer Paper, 17" x 25"		2.50 doz.		
Designs for 16" x 20" Circles, assorted	(6 designs)	1.50		
Copper Escutcheon Pins, 1/4", 18 ga.		2.70 lb.		
Foil Plaque Molds, assorted patterns and sizes		1.00 mold		
Masking Tape, 3/4" x 60 yd., 1 roll		1.20		
6" x 8" Designs for Copper Tooling		.50 (pad 24)		
Ceramics Supplies				
Pyrometric Cones, standard		.90		
Moist Clay, Amaco or equal	(lb.)	15.00 per 100		
Pottery Clay, low fire white, Fine-Art or equal	(lb.)	17.00 per 100		
Dry Casting Clay, Amaco or equal	(lb.)	14.00 per 100		
Glass Ready Mixed Glazes, LG series, 16 oz. jars, assorted colors, Amaco or equal		1.85		

Mosaic Supplies

DESCRIPTION	ESTIMATED COST	QUANTITY	TOTAL COST
Gold Finish Bowls, 6" dia.	6.48 doz.		
Rectangular Tray, 3" x 5", aluminum	2.69 doz.		
Square Trays, 5" brass	5.40 doz.		
Square Trays, 5" aluminum	3.84 doz.		
Free Form Tray, brass finish 6/7"	3.90 doz.		
Grout	2.98 (10 lbs.)		
Grout Sealer, 4 oz. size	5.00 doz.		
Braid, outlining: black	4.49 spl.		
gold	4.99 spl.		
Glass Stain Colors, 1 oz. bottles, assortment of 15 colors	7.00 (15 ozs.)		
Lead Tape, 1/8" wide	2.50 (100 ft.)		
Lead Adhesive	3.58 pt.		
Crushed Glass Mosaics, assortment of colors, 1/2 lb.	.29 pkg.		

DESCRIPTION	ESTIMATED COST	QUANTITY	TOTAL COST
Textone Gravel, assorted colors	.77 lb.		
Porcelain Tile, 3/8" assorted colors, 1' square shts.	.69 sht.		
Pebble Tile, bulk pkg. 10 oz. size.	7.90 doz.		
Venetian Glass Tile, 3/4":			
black (doz. shts.)	9.80		
red	20.00		
blue	9.80		
white	9.80		
Bulk Tile	22.50 (40 lbs.)		
Plastic Supplies			
Asbestos Gloves	6.55 pair		
Ethylene Dichloride Glue	4.05 qt.		
Plastic Rouge	.50 lb.		
Steel Wool	1.20 carton		
Hypodermic Syringes	2.50		

DESCRIPTION		ESTIMATED COST	QUANTITY	TOTAL COST
Plexiglas Sheets, 12" x 24", assorted colors				
Thickness:	1/16"	3.00		
	1/8"	3.00		
	3/16"	3.60		
	1/4"	4.30		
Liquid Castin Plastic, 1 lb. container, complete with one unit hardner and 1 unit accelerator		3.50		
Acrylic Rods				
Thickness:	1/4"	.34		
	3/8"	.44		
	1/2"	.61		
	5/8"	.82		
	3/4"	.90		
	7/8"	1.22		
	1"	1.60		
	1 1/4"	2.52		
	1 1/2"	3.50		
	1 3/4"	4.75		
	2"	6.15		

IX. OCCUPATIONAL ORIENTATION

Occupational orientation is a program of career exploration which includes the requirements, conditions, and rewards of the world of work. This program, under the direction of a qualified teacher, involves alloting blocks of time (usually one hour each day) for learning experiences and exploratory activities which help students in selecting an occupation. Occupational orientation is usually offered in either grades 8 or 9, but is also offered in other grades.

PURPOSE

The major objective of the program is to develop sound bases for making career and career-related choices. It seeks to stimulate the career decision-making process for all students regardless of vocational objectives. Pupils are not expected to make career choices while enrolled in occupational orientation. The development of a career choice is a continuing process which covers a long period of time. Also, the occupational choice need not be a permanent decision, but rather the first of a series of increasingly wiser and more specific choices.

OBJECTIVES

The major objectives of occupational orientation are:

1. To help students understand the basic process of production, processing, and distribution in American work-economy and the importance of human relations and ingenuity in these processes.
2. To help students gain a firsthand knowledge, understanding and appreciation of the changing employment patterns and opportunities in the world of work.
3. To help students learn to appraise their own interests, aptitudes, personalities, and skills in relation to a variety of vocational opportunities.
4. To develop the ability to adjust to real-life situations through self-understanding and acceptance.
5. To develop positive attitudes required for job entry and advancement.
6. To develop the understanding of the need to find fulfillment in productive living.
7. To foster self-evaluation as a means of developing realistic goals and a method of achieving them.

8. To develop an understanding of trends within the world of work that influence occupational choice.

9. To develop attitudes, values, and physical, emotional, social, mental, and moral habits conducive to job success.

10. To develop initiative, enthusiasm, fortitude, and a higher self-concept.

GENERAL NATURE OF THE PROGRAM

Occupational orientation was originally designed to be offered to pupils so that they would complete it shortly before entering a vocational education program. Since the emergence of career education, it has become a part of career exploration. Occupational orientation provides an opportunity for the exploration of occupations in eight broad clusters which include all occupations.

The clusters are based on the primary interest of the persons engaged in the occupations and were originally developed by Anne Roe of New York University. This cluster system is referred to as the "Roe Classification System" and is a part of a "needs" theory of occupational selection. The eight major clusters are sometimes known as "interest groups." The groups are:

I. Service
Occupations in the service group are concerned with helping other people. Workers in service occupations serve and attend to the personal tastes, needs, and welfare of other persons.

II. Business Contact
This interest group includes those occupations in which face-to-face contact is made with other people. (Sales occupations in which selling is routine and no personal persuasion is involved are in the organization groups.)

III. Organization
This group includes the managerial and white-collar jobs found in business, industry, and government. Organization occupations are concerned with the efficient functioning of activities within these agencies.

IV. Technology
Occupations concerned with the production, maintenance, and transportation of commodities and utilities are included here. Many of the skilled trades and construction jobs are in the technology group.

V. Outdoor
As is indicated by the name, this group is concerned with "outdoors" kinds of activities. Occupations in this group deal with crop production, management of water resources (both marine and inland), mineral resources, forest production, natural resources, and animal husbandry.

VI. Science
Occupations in this group are primarily concerned with scientific theory and its application. These occupations are distinguished from those in the technology group by the setting in which the work is performed.

VII. General Cultural
Occupations primarily concerned with the preservation and transmission of our general cultural heritage are in this group. These include occupations in education, journalism, law, and related areas.

VIII. Arts and Entertainment
These occupations include those which are primarily concerned with the use of special skills in the creative arts and in the field of entertainment. Creators and performers are included.

Each Group in the Roe system is divided into six levels. The levels are based on responsibility, capacity, and skill of the occupations. The major distinction between levels is found in the degree of responsibility for decisions. Persons in some occupations are required to make numerous decisions. Other occupations require considerable education and experience. Each level is described as follows:

Level 1. Professional and Managerial; Independent Responsibility.
This level includes the innovators and creators, the top managerial and administrative people, and the professional persons who have independent responsibility in important respects. They are policy makers. If a high level of education is required, it is at the doctoral level or equivalent. All Level 1 occupations do not require a high level of education, however. Examples in this level not requiring high levels of education are high government officials and persons in the creative arts.

Level 2. Professional and Managerial.
The distinction between this level and Level 1 is primarily one of degree. Occupations in this level are narrower or have less significant responsibilities than in Level 1. These occupations involve policy interpretation, medium degree of responsibility, and education at or above the bachelor's degree of level.

Level 3. Semiprofessional and Small Business.
These occupations have a low degree of responsibility for others and involve a technical-level education.

Level 4. Skilled.
This level and those following are common subdivisions of occupations. Skilled occupations require apprenticeship or other special training or experience.

Level 5. Semiskilled.

These occupations require some training and experience but markedly less than the occupations in the skilled level. In addition, there is much less independence and initiative permitted in these occupations.

Level 6. Unskilled.

These occupations require no special training or education and not much more ability than is needed to follow simple directions and to engage in simple activities. At this level, differentiation in the interest groups depends primarily upon the setting for the work.

Some occupations appear in more than one level. This is because the amount of education and/or experience required by those who are engaged in such occupations varies. Those at the higher level assume more responsibility and may be supervising or directing activities of others in the same occupation. (Examples of occupations in each category are shown on the following page.)

AN EXAMPLE OF HOW OCCUPATIONS ARE GROUPED IN THE ROE CLASSIFICATION SYSTEM*

	I Service	II Business Contact	III Organization	IV Technology	V Outdoor	VI Science	VII General Cultural	VIII Art And Entertainment
1	Counselor	Promoter	Industrial Tycoon Economist	Chief Engineer	Archaeologist Geologist	Research Scientist Medical Specialist	Supreme Court Justice College Professor	Artist Architect
2	Social Worker Probation Officer	Public Relations Specialist Manufacturer's Salesman	Certified Public Accountant Hotel Manager	Factory Manager Computer Programmer	Forester Surveyor	Nurse Veterinarian	Editor High School Teacher	Athlete Designer
3	Detective Welfare Worker	Automobile Salesman Insurance Salesman	Bank Teller Restaurant Manager	Pilot Radio Operator	Farm Owner Game Warden	X-Ray Technician Chiropractor	Radio Announcer Reporter	Ad Writer Interior Decorator
4	Barber Policeman	Auctioneer	Cashier Receptionist	Electrician Mechanic	Miner Oilwell Driller	Technical Assistant Practical Nurse	Law Clerk	Photographer Racing Car Driver
5	Taxi Driver Waiter	Peddler Routeman	Typist Mail Carrier	Bulldozer Operator Truck Driver	Farm Tenant Painter			Stage Hand
6	Elevator Operator Watchman		Messengerboy	Laborer Meter Reader	Farm Laborer			

*Anne Roe. **The Psychology of Occupations** (New York: John Wiley and Sons, Inc., 1956).

ORGANIZATION OF INSTRUCTION IN OCCUPATIONAL ORIENTATION

Occupational orientation classes meet approximately one hour each day for the school year. Pupils in grade 9, or higher, may receive a maximum of two units of credit toward graduation from high school. Most schools offer only one unit of occupational orientation.

Supervision and partial funding for occupational orientation are provided by the Vocational Division, State Department of Education. There is a State Supervisor of Occupational Orientation and two assistant supervisors. Reimbursement of money to the local school districts is the same as for vocational education programs. Many occupational orientation teachers are employed on a nine-month basis; others are employed for twelve months, especially if prorated.

PROFESSIONAL REQUIREMENTS FOR OCCUPATIONAL ORIENTATION TEACHERS

Teachers of occupational orientation fall into one of these groups:

(1) A baccalaureate degree with an endorsement in some field of vocational education must be held;

(2) A baccalaureate degree in industrial arts must be held;

or

(3) A certificate in counseling must be held.

Persons in the first two groups (those with baccalaureate degrees in vocational education or industrial arts) are required to have at least three semester hours in guidance education to teach the first year and six semester hours in guidance to teach occupational orientation the second year. Persons with certificates in counseling are required to have graduate courses in the philosophy of vocational education and special courses designed for teachers of occupational orientation.

BASIC EQUIPMENT LIST

Desk and chair
Two office chairs
Four drawer file cabinet with key
Bookshelf
Display rack
Stop watch
Telephone
Typewriter
Bulletin board
Wastepaper basket
Hat and coat rack
Letter tray
Four reception room chairs
Filmstrip projector *
16mm projector *
Cassette player and recorder *
Overhead projector *
Film loop projector *
50" x 50" tripod screen *

*These do not necessarily have to be in the counselor's office but should be made available for use by the counselor and occupational orientation teacher.

BASIC RESOURCE MATERIAL

OEK Kit
Science Research Associates, Inc.
259 East Erie Street
Chicago, Illinois 60611

Occupational Information in the Elementary School
Science Research Associates, Inc.
259 East Erie Street
Chicago, Illinois 60611

Occupational Outlook Handbook
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402
(you must send money with all orders from the U. S. Government Printing Office)

Dictionary of Occupational Titles Volume I
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Dictionary of Occupational Titles Volume II
Superintendent of Documents
(same as Volume I)

Encyclopedia of Careers and Vocational Guidance Vol. I & II
J. G. Ferguson Publishing Co.
Chicago, Illinois

Occupational Information by Robert Hoppock (third edition)
McGraw-Hill Book Company
New York, New York

Handbook of Job Facts
Science Research Associates, Inc.
259 Erie Street
Chicago, Illinois 60611

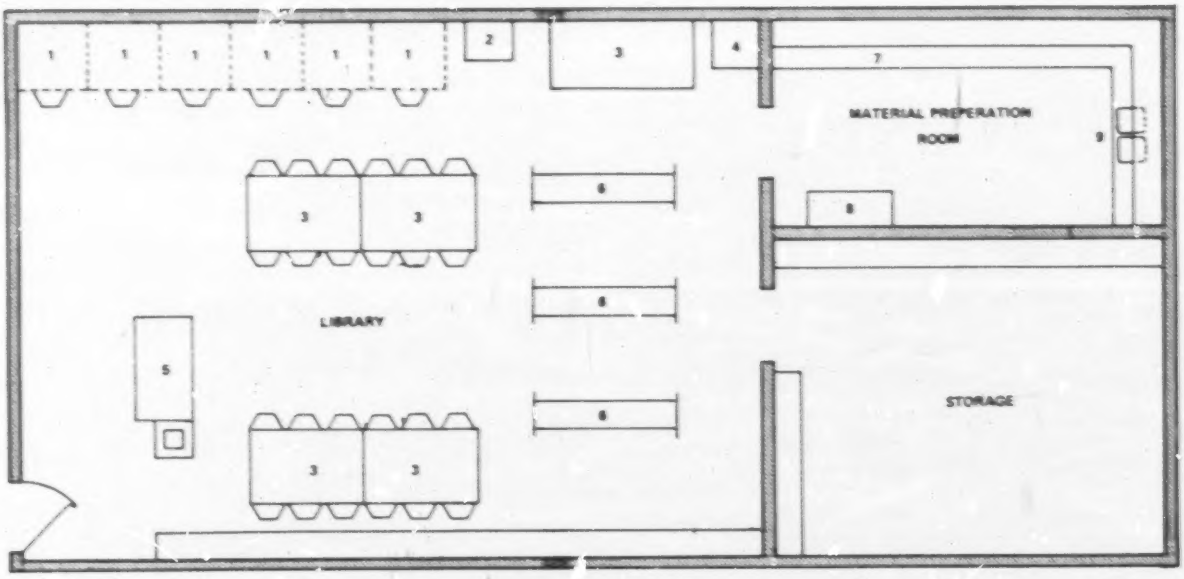
Sextant Series
Sextant Systems, Inc.
3048 N. 34th Street
Milwaukee, Wisconsin 53210

For additional resources, contact the office of the State Supervisor of Vocational Guidance and Occupational Orientation.

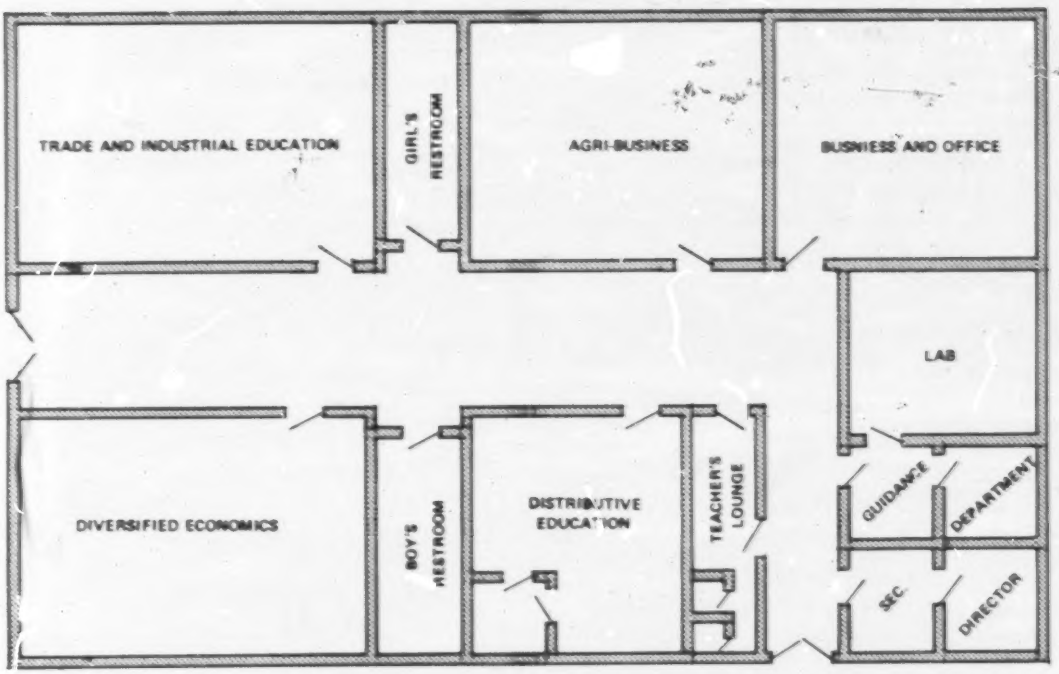
LEGEND

Occupational Orientation Lab

1. Study carrels
2. Filmstrip storage cabinet
3. Study tables
4. File cabinet
5. Lectern desk
6. Magazine racks
7. Base cabinets
8. Tracing table
9. Sink & cabinets



OCCUPATIONAL ORIENTATION LAB PLAN A



OCCUPATIONAL ORIENTATION CENTER PLAN B

X. VOCATIONAL GUIDANCE

Vocational guidance is defined as the process of assisting individuals to understand their capabilities and interests; choose a suitable vocation, and prepare for, enter, and make successful progess in that vocation.

Guidance services are those activities which have as their purpose (1) helping pupils assess and understand their abilities, aptitudes, interests, environmental factors, and educational needs; (2) assisting pupils in increasing their understanding of educational and career opportunities; and (3) aiding pupils in making optimum use of educational and career opportunities through the formulation of realistic goals. These activities include counseling pupils and parents, evaluating the abilities of pupils, assisting pupils in personal and social adjustment and working with other staff members in planning and conducting guidance programs.

PURPOSE

The purpose of vocational guidance is to help each individual to develop a realistic and positive self-image in relationship to his school, home, community, and the world of work. The vocational guidance programs are designed to provide assistance to all people from the 1st grade in school on through high school and adult life.

OBJECTIVES

1. To provide individuals with information about educational and occupational opportunities.

2. To assist people in assessing their aptitudes and potentials through standardized test data and counseling.

3. To assist people in securing a job that they will be best qualified for.

4. To follow up on all students completing vocational training in order to determine the overall effectiveness of the total educational program.

Vocational guidance usually is organized around the following five areas: information services, counseling services, placement services, testing services, and follow-up.

AREAS OF VOCATIONAL GUIDANCE

Information Services

Information services involve the collection, maintenance and dissemination of current occupational, educational, and personal-social information. These information services are provided to students, parents, teachers, and administrators. The intention of these services is to facilitate intelligent decisions by students and interested adults through the use of informational materials.

Occupational Information

Occupational information is a service designed to provide appropriate information on occupations which an individual can use in exploring the world of work and in making a wise career choice. Information of this nature is designated primarily for secondary school students.

The occupational information service should involve a cooperative effort between the vocational guidance counselor, personnel workers in industry, and the occupational orientation teacher if the school system has an occupational orientation program.

Career education begins at an early age, especially the career awareness phase. Occupational information as discussed here should be made available no later than the 9th grade. It is at this level that a student begins to make his first realistic exploratory activities regarding an occupational choice.

Occupational information can be incorporated into most of the settings suggested for dissemination of educational information. However, it is most appropriately used in occupational orientation classes or when such information is relevant to the discussion of various training programs offered by vocational education. For this purpose educational materials, such as current Occupational Exploration Kits or Career Kits (see materials list), are useful for presenting this type of information.

Educational Information

The educational information services provide information about the school, its curriculum, facilities, personnel, procedures, and policies, as well as about a wide range of post-secondary opportunities. The counselor should be responsive to the needs of the school and the community in making this information available. He

should become involved in community activities and take advantage of every opportunity to disseminate education-related information. Some examples of dissemination activities available to the counselor are:

1. Discussions of educational information with advisory or craft committees
2. Professional meetings of school administrators
3. Radio and T. V. public service programs
4. Articles for newspapers
5. Newsletters
6. Displays of various types in stores, county fairs, or public malls
7. Visitations with other school systems to participate in such activities as occupational orientation classes, "career days," and talks with individual classes about educational planning information.

Personal and Social Information

Personal and social information services are those services which help the student to understand the broad field of human relations, and understand himself and others. In terms of these factors, it is a functional approach to adjusting to his environment.

Personal and social information is provided through interviews, tests and inventories, and professionally and locally prepared information. (For sources of materials, see heading, "Basic Recource Material" at the end of this section).

Counseling Services

Counseling is the part of the guidance process concerned with the pupil's needs, capabilities, limitations, plans and decisions. Counseling aids the student with decisions as to what other aspects of education mean to him and what he should do about them.

The counseling process has no particular scheme but is flexible and may be different for each individual counselor. Each counselor will work in his own unique way to accomplish the counseling objectives, depending upon the counselor, the educational setting, and the needs of the student.

Placement Service

Placement services are an integral and necessary part of the guidance program. Placement is designed to get the student placed on a job or at the next level of his educational program.

Educational Placement

Educational placement is a continuous process in the educational experiences of the individual. In making a career choice the student is influenced by many people and various experiences. Wise career planning should allow maximum development of the student's interests, aptitudes, and abilities. The vocational counselor should be available at all levels of education to provide helpful assistance to the students in career planning.

Some of the activities which are considered a part of the vocational counselor's role in educational placement are recruitment, orientation and counseling.

1. Recruitment for vocational education: The counselor may use slide presentations depicting the various vocational programs offered by the local school; visit homes to get information to students and parents; use handouts, briefs, and brochures describing training programs and job outlooks which aid career choice; organize "career days" and utilize news media and displays to disseminate career information.

2. Orientation: Orientation programs should be conducted in the spring, summer, fall, or whenever students enter vocational training. Orientation consists of introduction to the school, testing, completing forms for personnel records, and a guided tour of the school.

3. Counseling sessions: The counselor and student should discuss such matters as test results, interests, aptitude, achievement, job prospects and training programs.

Job Placement

Job placement should provide assistance to students in obtaining part-time and full-time employment and assist them in making an easy transition from school to the job. Some of the responsibilities which are considered a part of the counselor's role in job placement are: (1) orientation to job placement; (2) student personnel records; (3) industrial contacts; and (4) knowledge of agencies which can provide information about job placement.

1. Orientation to job placement should emphasize instruction on how to find, hold, and succeed in a job. Some of the resources which may be used to achieve these goals are industrial speakers, employment service representatives, job interviews, résumés, and sample application forms.

2. Student personnel records should contain information which will aid the counselor. The records should contain information, such as teacher evaluations of students, test profiles, résumés, and personnel data sheets.

3. Industrial contacts may be utilized in finding employment for vocational education graduates. Through these contacts the counselor can have access to industrial surveys and agencies which can provide information on job placement.

Testing Services

Tests and inventories, when used properly, help the student to find out more about his interests and abilities, and motivate him to investigate occupations and make wise vocational choices.

Some of the tests and inventories that provide valuable information about students are the interest inventories, intelligence tests, achievement tests, special aptitude tests, and personality inventories. For more specific information concerning testing services, contact the State Supervisor for Vocational Guidance.

Follow-up and Evaluation

Follow-up is the guidance service that is concerned with aiding the individual to make necessary or desirable readjustments after entering upon his vocation. In the past this area of the guidance program has been neglected. It appears that many schools forget about the student after graduation. This probably is due to the failure of the school to maintain contact with students.

A good follow-up service can provide valuable assistance to the graduates, as well as provide valuable information to help those currently enrolled in vocational programs. Plans should be initiated to get the permanent addresses of the students and their parents prior to graduation. By keeping an up-to-date file on graduates, the counselor will be in a position to meet the above mentioned student needs.

Some of the adjustment needs of young workers are: assistance in getting a new job because of loss of a job or desire for a better one; aid in removing causes of dissatisfaction; help in determining what additional preparation to seek and how and where to get the instruction.

Follow-up services can help those currently enrolled by providing valuable information which can be used to evaluate vocational programs. The information provided by former students can be used to meet the requirements for the State Department follow-up.

SPACE AND ROOM SIZE

In planning for facilities and space for the guidance department, consideration should be provided for two areas that can be used for the dual purposes of an office and a conference room for individual counseling sessions. Additional space for a waiting room or browsing area should be provided for students who are waiting to see the counselor.

Each of the combination office-conference rooms should be furnished with a desk, two chairs, and a four or five drawer filing cabinet. These items are the minimum amount of furniture and fixtures needed for the individual counseling services.

The waiting room or browsing area should be furnished with magazine racks and bookshelves for storing pamphlets, brochures and books about career information. A table and chairs should be provided for a reading area for student use.

The amount of space required for the above mentioned facilities will vary from one school to another. Generally, the overall dimensions of the combined offices and waiting room should be approximately 30' by 30'. The floor plan (p. 206) suggests a waiting room with overall dimensions of 20' by 30' and two offices with overall dimensions of 10' by 15' each. In planning for guidance facilities, the administrator should consider the needs of the students and community and plan for facilities that will best meet these needs.

BASIC EQUIPMENT LIST

Desk and chair
Two office chairs
Four drawer file cabinet with key
Bookshelf
Display rack
Stop watch
Telephone
Typewriter
Bulletin board
Wastepaper basket
Hat and coat rack
Letter tray
Four reception room chairs
Filmstrip projector *
16mm projector *
Cassette player and recorder *
Overhead projector *
Film loop projector *
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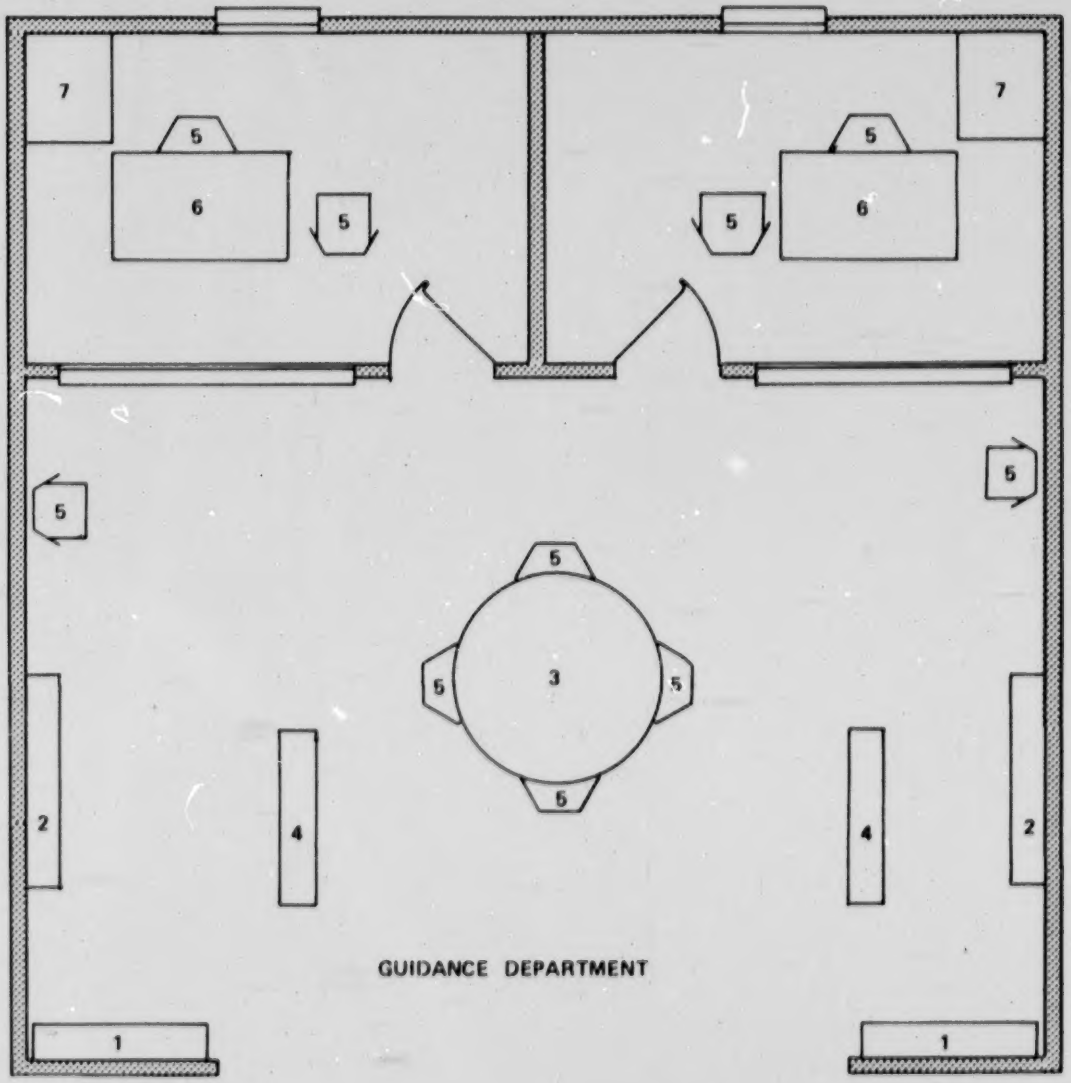
3048 N. 34th Street
Milwaukee, Wisconsin 53210

For additional resources, contact the office of the State Supervisor of Vocational Guidance and Occupational Orientation.

LEGEND

1. Magazine rack 4' x 1' x 5'
2. Couch
3. Round table (6' diameter)
4. Magazine rack
5. Chair
6. Desk 2' x 3' x 5'
7. Five drawer filing cabinet



GUIDANCE DEPARTMENT

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